See General Review Section Beginning Page 33

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XVI, No. 3 **JANUARY, 1940** **$2.00 a Year**

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Fluorescent Pigments

In the October 1939 issue, you have an article on fluorescent pigments and lacquers. On page 29 of this article, there is a statement to the effect that a manufacturer is offering fluorescent pigments. We are interested in obtaining the name of this manufacturer.—S. L. Co. (Lacquer Specialties)

Rubbing Machine

We read with the greatest interest the article regarding "Rubbing and Polishing Furniture Mechanically" in November 1939 issue of your esteemed publication. We should be very thankful to you, if you would refer us to a suitable manufacturer of the long-stroke rubbing machine in question, as well as the other types of machines mentioned in the article. The reproduced single-block portable rubbing machine, driven by compressed air, is already known by us.—S. M. G., Stockholm, Sweden. Svenska Maskinaktiebolaget Greiff, Tulegatan 20, Stockholm, Sweden.

Information supplied.—ED.

Graining Paper

In your December number, we find inquiries regarding wood grain transfers. We handle transfer graining paper in a variety of patterns and are sending you a sample booklet showing the various grains we can furnish. This comes in rolls of 17½-yard lengths and 26-in. widths, and is sold at a price of $1.50 per roll, f. o. b. Chicago. We would appreciate it very much if you would give our name to the interested parties.—O. Leistner, Inc.

French Polish

In your October issue, you had an inquiry with reference to French Polish. Would you be kind enough to let us have the address of the person inquiring, so that we can send them information which we feel will be of benefit to him? — Star Chemical Co., Inc.

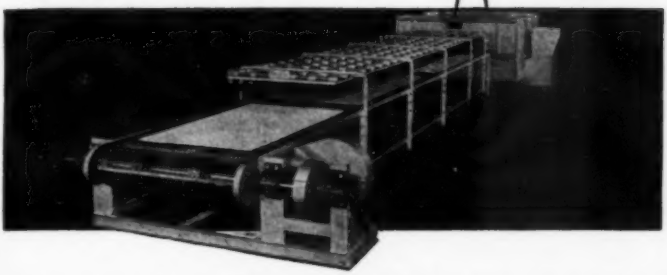
Attractive Range Finish

In our domestic gas ranges we use a baked black japan finish for storage compartments and utensil drawers. This type of finish has been universally used by range manufacturers for many years.

We feel that there is an opportunity for the improvement of the finish in these parts of the ranges. A lighter color and more attractive finish should certainly add to the salability of a range.

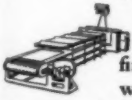
It has occurred to us that there has been a tremendous development in industrial finishes and undoubtedly some new finishes have been developed that might suit our purpose. Perhaps you can tell us of some that would not cost appreciably more than black japan.

MAYBE WALL BOARD IS OUT OF YOUR LINE, BUT...



YOU'LL BE INTERESTED IN KNOWING HOW THIS INDUSTRY SOLVED PRODUCT-FINISHING

What's Your Problem?



The problem of finishing wall board with greater efficiency and economy was easily solved. With DeVilbiss on the job, the product-finishing problem of that industry became the problem of DeVilbiss Spray Experts who had solved hundreds like it. The answer was DeVilbiss Automatic Spray Equipment—the result, a tremendous saving on finishing costs, with a distinct improvement in quality.

That's a job that DeVilbiss is doing for all types of industries every day. DeVilbiss Automatic Spray Equipment is finishing products of all sizes and shapes, spraying all materials, fitting into all production set ups—reliably and profitably.

If you can utilize the remarkable advantages of DeVilbiss Automatic Equipment, you'll want to know it. A DeVilbiss Spray Expert can tell you—quickly. Write to the factory.

DE VILBISS *Automatic* **SPRAY SYSTEMS**

THE DE VILBISS COMPANY • TOLEDO, OHIO • U.S.A.

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NOT A SLOGAN —
A SUGGESTION!!

TOPS as you probably know, is the newest and most talked about finish today.

A single application — gives double body — added coverage and a finish that's *really* "TOPS."

Order five gallons today at drum price, with our "money back" guarantee.

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Wood Finishing Supplies

1830-32 NORTH LARAMIE AVENUE CHICAGO, ILLINOIS

Tousey BAKING Duracotes

THREE MINUTES AT 330°
TO ONE HOUR AT 250°

COVER SOLIDLY IN ONE COAT
HAVE A HIGH GLOSS
EXCELLENT ADHESION TO METAL
EASY APPLICATION BY SPRAY, DIP OR ROLLER COATING
ALSO — A NON-YELLOWING WHITE INCLUDED IN DURACOTE BAKING LINE

Write for Prices and Samples

TOUSEY VARNISH COMPANY

520 WEST 25th STREET CHICAGO, ILLINOIS

Varnishes — Enamels — Lacquers — Synthetics : Since 1885

Perhaps we should mention that the finish must withstand a temperature of 200°F., such as occurs in our heated warming oven model ranges.—Q. M. Co.

We have submitted a few suggestions, but would like to hear from several readers on this.—ED.

Oven Wanted

We are in the market for a baking oven approximately 10x18-ft., by about 10-ft. high. If you can advise us concerning this, or refer us to some source, we shall appreciate your courtesy and consideration.—T. Metal Products Co.

Oven companies notified.—ED.

Sealer for Compo Board

On page 54 of INDUSTRIAL FINISHING for November, R. E. Co. inquires for a sealer to be used on compo board. We would appreciate the name and address of the R. E. Co., as we manufacture a sealer that we are sure will do the trick on any kind of composition wallboards.—Chadakoin Chemical Co.

Graining Machines

I am interested in some information about graining machines that are used for graining flat surfaces for furniture, stoves, etc.—J. A.

Information given.—ED.

1937 Furniture Polish

Please send us the name of the furniture polish manufacturer, as per your item of January 1937, page 83. —H. B. Co.

It is a product of Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa.—ED.

"Paralyin"?

We would appreciate any information you can give us concerning the making of Paralyin.—K. R. Co.

We have no information about the making of any product called "Paralyin." We are wondering if you

NOROY

GLOSS LACQUER
W-1055

FLAT LACQUER
F-1656

37% SOLIDS

at the gun!

- Produces a beautiful durable finish. Eliminates one or more finishing and sanding operations. Saves TIME, LABOR, MONEY.
- Guaranteed to be uniform in quality and performance.
- Complete data and information will be sent on request.

✶

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Factory . . . Rahway, N. J.

For
HIGHEST LUSTRE
and
PUREST COLOR
Use
ULTRA RAY
PEARL ESSENCE

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with

ULTRA BRILLIANCY
ULTRA PURITY
ULTRA DURABILITY

Ultra Ray's scientifically controlled method of manufacturing has created a new Standard of Brilliance. Comparative tests in every field where pearl essence is used has resulted in proof that the quality of ULTRA RAY PEARL ESSENCE is unequalled.

Produced by

"The Originators of American Pearl Essence"

Edw. I. Petow & Son

Executive Offices, Hyannis, Mass.

Established 1917

(Special Ultra Ray Pearl Essence may be obtained for use with vehicles other than lacquer.)

have in mind "Paralan," a temporary protective coating for steel products to prevent them from rusting before they are placed in production and made ready to receive permanent protective coatings? Paralan is a product sold by the American Lanolin Corp.—ED.

Stripes on Glass Tube

Can you tell us the name of a manufacturer who supplies or can supply, a paint striper that will lay a 3/16-in. and a 3/32-in. enamel stripe longitudinally along 9/16-in. diameter glass tubing?—E. A. Co. (Glass Specialties)

We have submitted the names and addresses of several manufacturers of striping tools.—ED.

Rubbing Compound

In your July, 1939 issue, page 52, you specified that Phenoid rubbing compound is a product of a chemical company in Newark, N. J. Would you kindly send us the name and address of this chemical company in Newark? We sent an order to Newark several times, but the letter was always returned to us, marked, "not in directory."—J. Cabt. Co.

Product of Chalmers Chemical Co., 123 Chestnut St., Newark, N. J.—ED.

Air-Motored Mixer

On several occasions I have noticed an advertisement in your magazine of a compressed-air paint-mixing unit which is fastened on the side of an open-head paint drum. However, I have misplaced the magazine showing the advertisement of this item, and I would appreciate having you send me the address of the company manufacturing these paint mixers.—T. C. Co. (Composition Panelboard)

It's Eclipse Airbrush Co., 390 Park Ave., Newark, N. J.—ED.

Coating for Nails

We note on page 60 of November 1939 issue, that a company has requested information concerning the coating of (wire) nails. For several years, we have supplied a coating of this sort to the trade under our

(Continued on page 83)

THERE IS NO SUBSTITUTE FOR A *Perfect* FINISH

The answer to those who are seeking "the perfect finish" is FLO-BAK SYNTHETIC ENAMEL—the porcelain finish. An easy flowing material of high lustre and long durability. Not a flash in the pan but a product which has proven its worth through several years of practical usage.

This product is baked at 300° for ten minutes and is then ready for assembly and shipping. Eliminates long and costly waiting periods between spraying, baking and packing. Baking periods may be adjusted to suit individual finishing schedules.

Is acid, alkali and alcohol proof. May be had in all colors.

A general utility material ideally suited for metal, glass, and other products requiring a "perfect finish."

Further information and samples will be gladly furnished on request.

LACQUERS · THINNERS · ENAMELS · METALIZED FINISHES · SYNTHETICS

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CLINCO

CASKET FINISHING MATERIALS

Will Cut Your Unit Cost

A complete line of primers, bronze lacquers, thinners, rubbing and non-rubbing topcoats especially formulated for the casket industry

Give

Our customers the best quality finish at a lower unit cost.

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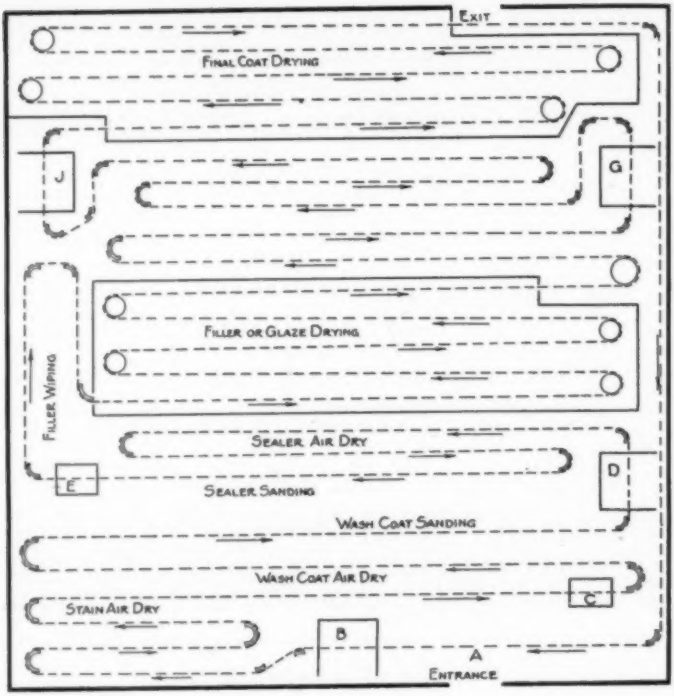
1210 ELSTON AVENUE **CHICAGO, ILLINOIS**



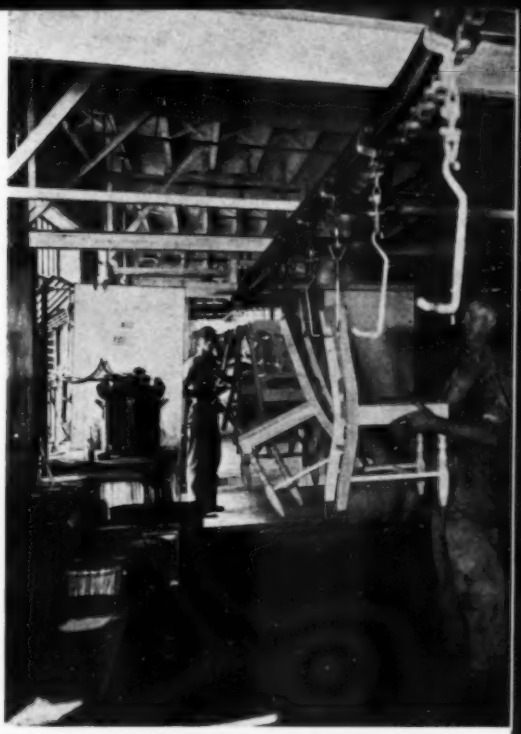
« Finishing Chairs on the Co

BY W. H. ROHR

A properly-engineered conveyor system offers many economies in labor and time; gives a uniform finish (as all operation and all drying times are controlled); and it practically eliminates rejects and subsequent repairs to finishes.

IN WINSTON-SALEM, N. C., the Unique Furniture Makers, Inc., manufactures breakfast and dinette suites in several attractive finishes including oak, walnut, mahogany, blond, and painted effects with miscellaneous colorful decorations.

With several chair designs and so many different kinds of finishes, productive operations in the finishing department became a real problem. Furniture piled



Left: Fig. 1—Plan view of conveyor and production line. B, D, G, J—Spray booths. C and E—Dipping tanks.

Right: Fig. 2—Where chairs are placed on conveyor. First spray booth is straight ahead.

Photographs, courtesy of the Palmer-Bee Co.

he Continuous Conveyor »

up on the floor around each work station and it had to be handled and rehandled. Congestion, slowness in moving, excessive labor costs, uncertain schedules, nonuniformity in finishing and drying—in fact, a little of almost everything that progressive management strives to avoid was giving the company more or less trouble.

Determination to remedy these conditions is what prompted the firm to consider the installation of a modern conveyor system. The problem was turned over to engineers of a conveyor concern that has designed and put in several successful installations in furniture factories. A space of 85x88-ft. on the second floor of one building was available for all work stations and drying rooms. The way in which this space was utilized by the engineers is revealed in the accompanying illus-

trations and the floor plan layout.

Among the results accomplished, everyone concerned agrees upon the following: It has eliminated all of the congestion, reduced manual handling of furniture by about 75%, effected continuous steady production on basic time schedules, produced uniformity in all finishing and drying operations, increased the speed and volume of finishing, with less labor and within less time, at no increase in floor space. The system is flexible enough to accommodate several different kinds of products, finishes and time schedules. It saves a tremendous amount of time and labor by permitting the men to work continuously on productive finishing, whereas formerly, so much of their time and efforts were spent in moving furniture to and from work stations, lifting it onto and taking it off spray booth turntables, and pushing it into and out of drying rooms—or waiting for others to do or help do these non-productive time-consuming tasks.

Finishes 800 Chairs per Day

The conveyor is about 1850-ft. long and its rate of speed can be varied by means of variable-speed transmission. Moving at the rate of 5-ft. per minute, its present capacity is 800 chairs per 8-hour day. The conveyor is an overhead chain and I-beam type with swivel hangers from which iron hooks hang to carry the chairs, as shown in illustrations with this article.

Chairs ready for finishing are trucked across a bridge from the cabinet room and are hung to the conveyor hooks, as shown in Fig. 2 and at the point marked *A* in the plan view, Fig. 1. The first spray booth B, can be utilized for either staining or prime-coating, depending upon which type

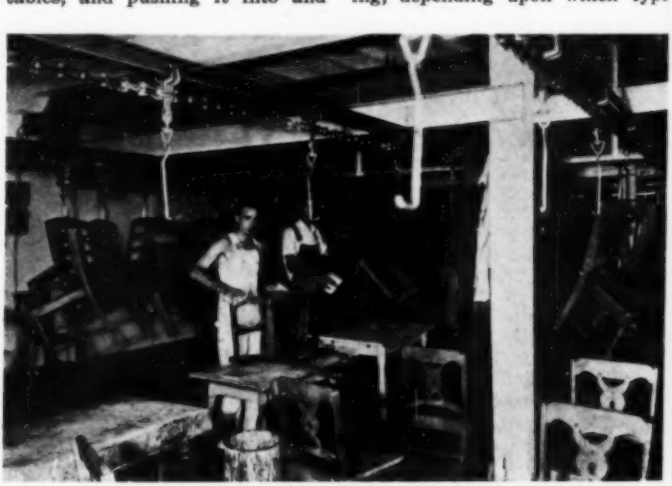


Fig. 3—Sanding the wash coat, before chairs enter the first sealer-coat booth, D.

"The handling of our chairs has been reduced 75% . . . they must be removed from the hooks several times for filling, glazing, dipping, sanding, stenciling and striping."—C. L. Creech, Jr.

of finish is to be applied. Following this first spraying, the conveyor makes hairpin turns and straight line runs to allow time for the first coat to air-dry for about 34 minutes before it reaches the wash-coat dip tank marked *C* in Fig. 1. Painted chairs, of course, do not ordinarily receive a dip wash-coat, therefore the prime coat, sprayed on at booth *B*, will have just that much more time for air-drying.

From the wash-coat tank to the first sealer coat spray booth *D*, the time period is 32 minutes, but the last 10 minutes of this time is allowed for smoothing the surfaces by skillful and thorough hand sanding. To do this job with maximum speed and efficiency, workmen remove chairs from the conveyor, hand sand them on work tables, as shown in Fig. 3, and hang them to the conveyor again. The conveyor moves along slowly enough to permit this work to be done easily and satisfactorily within the period of time allowed.

At spray booth *D*, a sealer coat or intermediate paint or enamel coat can be applied, depending upon the type of finish required for the job going through. Air-drying and light sanding follow in order—28 minutes for air-drying and 10 minutes for the sanding.

Next in line is the filler or glaze dip tank (E, Fig. 1) and space for filler set-up (6 minutes) filler wiping (6 minutes) filler oven drying (65 minutes) and filler cooling (31 minutes).

Fig. 4—The wiping operation, following application of glaze or filler by dipping.

Fig. 5—Hand decorating operations are performed in part of the space between ovens.

Instead of the chairs being filled at this point some jobs call for a dipped glaze coat, which is oven dried afterward.

The wiping of chairs that have been dip-glazed or dip-filled is ilustrated in Fig. 4. This operation also involves the removal and replacement of chairs on the conveyor line. The hand decorating of certain types of chairs is illustrated in Fig. 5. This work takes place between the two drying ovens shown in the layout marked Fig. 1, and before the chairs enter the final spray booth *J*, where the last coat of finish is applied.

In the last spray booth (*J*, Fig. 1) a coat of clear lacquer or clear varnish is usually applied, although a final color coat can be sprayed at this booth if the schedule on some work calls for it. Following this last spray coat, the chairs enter a drying room in which they continue moving by conveyor for about one hour before reaching the exit. At the door to the packing and shipping room, chairs are removed from the conveyor. They are then ready to be packed in cartons and temporarily stored or loaded directly onto trucks or railroad cars for shipment to retail furniture stores throughout the country.

The great improvement resulting from the installation of a conveyor system in this finishing room is representative of what has been accomplished in a number of other plants—some manufacturing furniture and other products of wood; others manufacturing products made partly or entirely of metal.

To get efficient production, the work in process must be on the move continuously; and it isn't moving when it is piled on the floor at many points waiting to be handled and moved manually. Conveyorization takes care of the handling and transferring jobs, keeps products off the floor, establishes every man as a productive worker, sets and maintains a steady pace for all workmen along the line, and forces the foreman to think ahead and see

that suitable materials and supplies are provided in advance at every work station.

Of course, every conveyor system, to be satisfactory, must be engineered by experienced men who are familiar with the type of production to be handled. These men are competent to fit the installation to the space available, to the products to be finished, and to the materials, production methods and drying schedules to be used in the finishing process. There is much more to the mechanics of efficient conveyorization than is revealed in any floor plan layouts or in any photographs made of successful installations in full operation. Conveyor systems are practical and economical, as is evidenced by the many excellent installations now in successful operation in numerous factories making different types of products.

New Lacquer Plant

A new ultra-modern lacquer plant has just been completed and put into operation at Kankakee, Ill., by The American-Marietta Co., which is the mid-western industrial division of the American Asphalt Paint Co., whose general offices are in Chicago.

This new $50,000 unit is a fine example of modernistic architecture, designed and planned by the company's technical staff in conjunction with a local firm of architects. It utilizes efficiently all of the most modern lacquer-making equipment.

An outstanding feature of this new plant is the completely equipped control and experimental laboratory which is advantageously located on a specially constructed mezzanine floor.

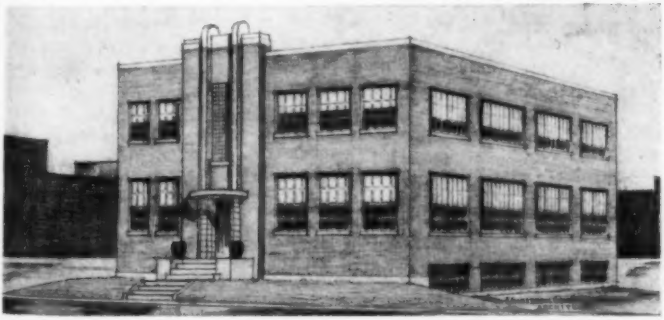
Feeding the main plant are a new battery of eight additional storage tanks, a specially constructed pump house, and a large barrel warehouse.

The American-Marietta Co.'s new lacquer unit adjoins the large 3-story plant of the American Asphalt Paint Co., which also has expanded its facilities through the building of three new varnish stacks and the addition of three high-speed roller mills and a large pebble mill to supplement the present grinding equipment.

The company also announces that a new stain and filler department has just been installed in one wing of the old plant, which will enable them to supply the growing demand of the finishing industry for this type of material.

Grover M. Hermann, President of the company, has turned over the management and direction of the Industrial Finishing Division to Muir Rogers, who is capably assisted by a staff of experienced lacquer chemists headed by L. K. Donovan.

This heavy expansion program has been necessary due to the fact that sales on industrial finishes of all types, including lacquers, stains, varnishes, and thinners have more than doubled during the past six months. The present plant and high-speed equipment are more than capable of taking care of this rapidly increasing volume.



To Obtain Finish Costs

FOR COMPARISON OF MATERIAL AND LABOR

BY R. JAY BURNS

Accurate cost records enable you to intelligently compare materials of same quality, for coverage and finishing cost per unit. This data also shows performance of different workmen as to number of units finished, quality of work and percentage of material wasted.

IN MY ARTICLE entitled "Enamel Viscosity," which appeared in November 1939 issue of this magazine, I made some cost comparisons between enamels that might appear to be alike but which actually are not alike. This inspired the subject of a proper method of computing and comparing costs.

There can be no comparison of costs between several finishes of different quality. Certain qualities are desirable in a finish for your job. First, you determine what these qualities are. Then you go to several manufacturers of finishing materials of high repute, and announce that you want a finish having these qualities.

If, after testing the materials for quality, you find that some of them are better than you require, with a correspondingly higher price, they may be eliminated. If others are lacking in necessary qualities, they too may be eliminated. In this way it is easy to eliminate all but the two or three more likely materials.

A production run should then be made with each of these materials. Use enough of each material to get an accurate average number of units that each will finish for a given quantity. Figure the total gallons of enamel used, plus the total gallons of thinner used. This will enable you to get an accurate unit cost. That is what you are interested in rather than cost per gallon.

It is my experience that this is the only satisfactory way to compare the cost of two or more materials that are to give the same quality of finish. Having selected the finish that is to be used, it is then a matter of keeping day-to-day costs.

System of Cost Records That Gives Facts Accurately

The only satisfactory system of costs that I know of is to keep an accurate record of units finished each day, and the quantity

Schaefer's MAR PROOF LACQUER

TRADE MARK REGISTERED

HERE it is! A lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies . . . a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods. . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for the first coat.

THE SCHAEFER VARNISH COMPANY, INC.,
LOUISVILLE, KENTUCKY

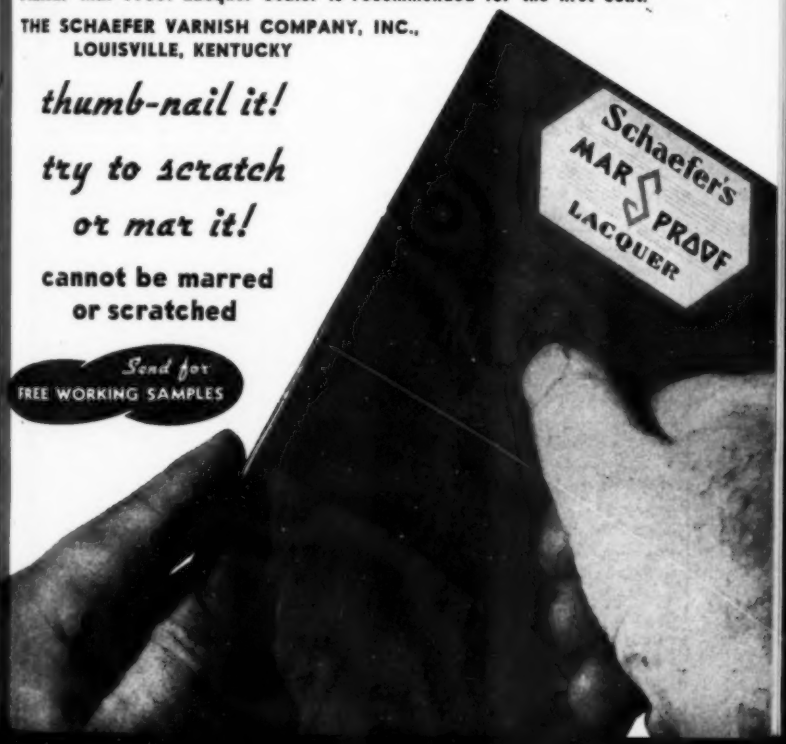
thumb-nail it!

try to scratch

or mar it!

cannot be marred or scratched

Send for
FREE WORKING SAMPLES



of finishing material used on them. If such a record is kept over a reasonable period of time, an accurate average unit cost can be easily obtained.

By computing the area of each type and size of piece finished, it will be readily determined what the square inch or square foot finishing cost is for each piece. This figure is then available for estimating the probable cost of finishing a similar piece that has not yet been put into production. Allowances must be made for any difference in material wasted in overspray because of the difference in size or shape of the articles.

This method of estimating is accurate only so long as exactly the same finish is to be used on the new piece, as was used on the one for which the cost was figured. The covering capacities of different materials will vary widely. The fact that one material will cover 400-sq.ft. to the gallon does not warrant the belief that a dissimilar material will cover the same area.

What a Steel Cabinet Manufacturer Discovered

There are a number of satisfactory systems in use for accumulating cost data. As an example, we will examine the method used by one manufacturer of steel cabinets. These cabinets are of various sizes and design, but they are used for about the same purpose and they require the same quality of finish.

The finishing material, in this case, is a white baking enamel. The enamel has a high percentage of solids and one pass of the spray gun should deposit a heavy enough film, with no double lapping nor cross coating.

Several men work on this production line. They all have the same equipment and are spraying the same finish on the same type of work. Each man has his own style of spraying, however. One will be slow and very care-

DAILY SPRAYER REPORT

DATE_____

EMPLOYE_____ NO._____

DEPT._____ FOREMAN_____

QUANTITY	STYLE	SIZE	GREEN	WHITE	IVORY	GROUND	BROWN	SP. GR.	WRINKLE	WAX	BLACK	VARNISH	

TOTAL MATERIAL_____

SOURCE OF SUPPLY_____ NO._____

TOTAL SURFACE AREA_____

SQ. FT. PER GAL._____

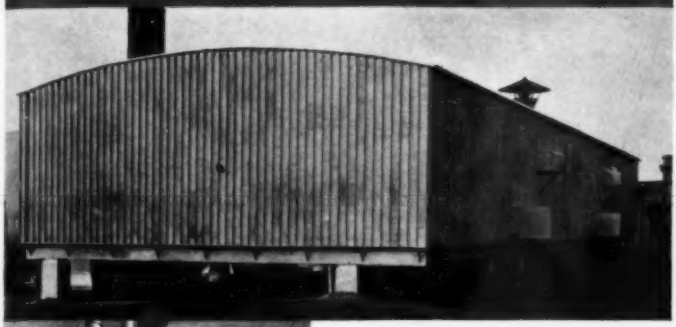
REMARKS_____

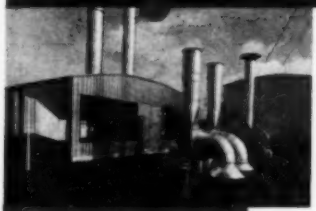
REDUCTION

MATERIAL	No. 10	LAC. THINNER	TOLUOL	No. 1	No. 2	No. 3	V. M. & P.
XYLOL	No. 30	BUTYL AL.	BUTYL AC.				

A Daily Sprayer Report like this is filled in by each spray man at the end of day.

OVENS





. . . . of Any Type to Meet Every Industrial Requirement

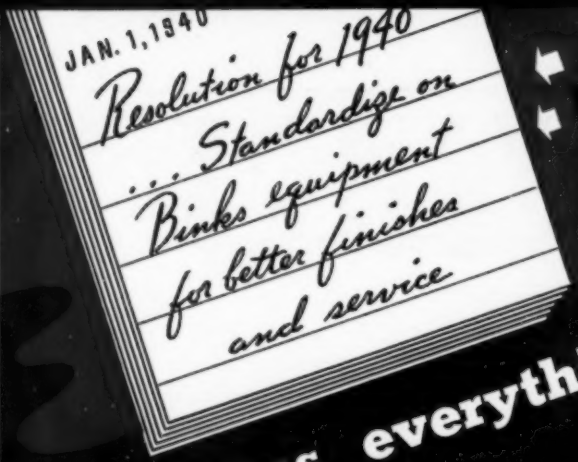
Industrial ovens in large scale production operations of today present many problems due to their size and other physical characteristics. In many instances, as in the installation illustrated here, Mahon engineers have designed and installed complete ovens and heating equipment on roof of plant. This practice not only economizes in valuable floor space, but eliminates certain restrictions in oven design caused by columns, piping, ducts, etc., which are usually encountered when large ovens are to be installed inside the plant. If you are contemplating new oven equipment Mahon engineers will gladly give you complete information and show you advantages and economies of this type of oven installation. Write today.

THE R. C. MAHON COMPANY

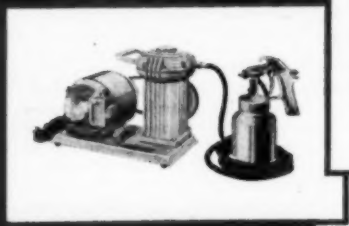
DETROIT — — CHICAGO

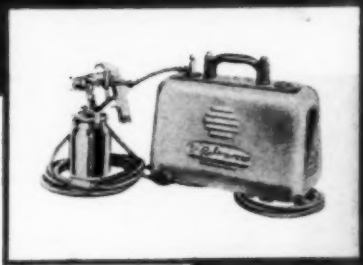
Designers and Manufacturers of Complete Finishing Systems, Metal Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON



Binks has everything





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ful, while another will work much faster and sometimes be less careful.

Obviously, the only way to compute costs under these conditions is to average the output of all the men.

Daily Sprayer Report

This concern uses the "Daily Sprayer Report" form. This form is filled in by each spray man at the end of the day and okayed by the department foreman. It shows the number of each type of cabinets finished, the total gallons of enamel sprayed, type of thinner used, and the proportion of enamel and thinner. The cost clerk has a table giving the area of each type of cabinet. He readily computes the total square feet finished and the average square feet of work finished for a gallon of enamel.

In this shop one man consistently sprayed more units a day than his fellows. This might be desirable but in this case it was not, as he was averaging fewer square feet of surface for each gallon of enamel. Since the daily enamel cost is much higher than the labor cost, it is desirable to get out fewer pieces and save enamel.

A check-up showed that in his haste, this man was using eleven passes of the gun to finish the outside of a cabinet that required only eight passes from the slower men. He was lapping each stroke over the adjacent one farther than is necessary for good work. In this way he was applying more enamel on each cabinet and wasting more material through overspray at the end of each stroke. I do not believe that men can ever reach mechanical perfection on this kind of a job. In this case the Daily Sprayer Report was the means of training a man to work more effectively.

Sources of Material Supply; One or More, and Why

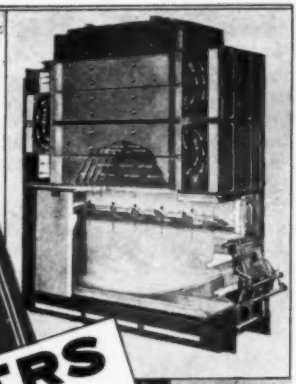
This concern buys such a large volume of this white enamel that they find it desirable to buy from two sources. The company has the advantage of having a source "to fall back to" in case of delayed shipments or trouble with the finish. The disadvantage of buying the same material from two sources is that in case of finish failure it is sometimes difficult to fix responsibility for the failure. The Daily Sprayer Report lists whose material was used on the day that the order in question was finished.

Let me say here that I do not advocate multiple sources of supply for small buyers. Most finish salesmen are paid in whole or in part on a commission basis. Naturally, it is good business to devote the most time and attention to the most lucrative accounts. When the user of moderate quantities splits his source, his business is not particularly attractive to the salesman from either source, and so he may get less attention. If all the business goes to one man and if he knows that he is getting all there is to get, he is apt to place a higher value on the account.

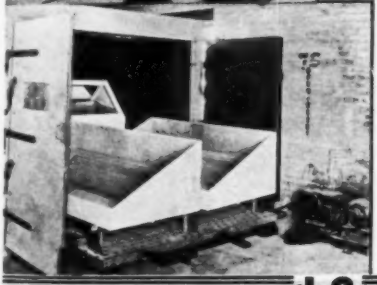
In the cabinet factory in question, one man is responsible for measuring and mixing all finishing materials. He checks the viscosity accurately and knows that the material is right before it is given to the spray man. No hit or miss paint mixing here! He has a record of the quantity of

ROSS

For Those NEW Finishes



AIR HEATERS - OVENS -



With the right equipment to apply them, the new rapid bake synthetics and other new finishes can give you substantial savings and advantages. Ross OVENS and AIR HEATERS meet the time, temperature, and handling requirements for the new as well as the older coating materials and finishes.

•

Inquire about adapting your existing ovens to the new finishing conditions

J. O.

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material given to each man and this affords a check on the spray man's figures on the Daily Sprayer Report.

The time and expense involved in keeping this report is so slight that it is readily justified. If it is known just how many units should be finished with a gallon, and if the report shows a wide difference, it is possible to detect the fault and correct it. Such a record, to some extent, shows the worth of each man. The greatest benefit, of course, is to know at what price to accept orders.

Wet Sanding

FINISHERS may take a lesson from how a celluloid smooth-job was handled in the factory of Shoe Form Co., Auburn, N. Y. This company manufactures those shapely leg forms on which stockings and shoes are so attractively displayed in the retail stores.

The form is made of sheet celluloid and shaped in steel dies, heated to mold the celluloid. The form must be absolutely smooth, as the slightest roughness would damage the sheer stockings. The contour of the beautiful leg form must be perfect, therefore the lap joint in the celluloid material must be feather-edged; it must not show.

The manufacturer tried dry machine grinding or sanding, but without an appreciable increase in production over hand work. The heat generated in dry grinding melted and distorted the celluloid. Results obtained by hand sanding excelled, in quality and finish, dry machine sanding.

Finally a test was made with a new wet-or-dry belt sander (or abrasive-belt grinder). The water used with these abrasive belts eliminated the heat and therefore avoided any damage to the celluloid forms. The operation was speeded up. The waste material ground from leg forms was completely washed away with each revolution of the belt, and a clean sharp abrasive belt was constantly presented to the work, thus further speeding up the operation.

Greater production was not the only result, but a smoother and more beautiful polished finish was obtained, thus enhancing the product and increasing its salability.—*Porter-Cable Bulletin.*

New Finishing Bulletin Free

A Technical Data Bulletin on M&W Codur Enamels, high-speed synthetic finishes designed especially for high-grade products subjected to severe service conditions, has just been published by Maas & Waldstein Co., makers of industrial finishes, Newark, N. J. The Bulletin gives the information on the Codur line needed by the practical finisher, including specifications for finishing Bakelite products and for finishing steel cabinets and furniture. Copies are free on request.

Fluorescent Lighting Bulletin

To broaden the application of fluorescent lighting, the Miller Co., Meriden, Conn., has made available a 2-light fluorescent fixture for the general illumination of industrial areas. This is illustrated and described in a new 4-page catalog folder.

Apart from its broad overall lighting efficiency, the low cost at which this fixture is being offered makes its use applicable to a wide range of industrials. It does not in any way conflict with the so called localized or localized general lighting units heretofore offered, but is designed especially for general illumination mounted 9 to 12-ft. above the floor.

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For Fine Cabinet and Furniture Work

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Electrical Modernization

NEEDED IN PRODUCT FINISHING ROOMS

My field work among industrial finishing departments shows that they need adequate wiring badly. Some are operating with electrical equipment that is dangerous, due to existing flammable gases and liquids. I have done considerable field work on adequate wiring. This article brings out the highlights of my survey, and the advantages of streamlining all of your electrical equipment.

BY FRED MERISH

SINCE THE FINISH of a product is of such tremendous importance to its salability, it would seem that plant management would make sure that all essential operating elements were in first class order. In most cases, foremen finishers appreciate the desirability of using the most efficient and modern spraying equipment and materials, but too often the unseen power behind the gun is given little consideration.

During a survey of industrial finishing departments in eastern states, we found that approximately 52% of them were operating with inadequate electrical hook-ups and service. These departments were deficient, if not in all, in some phase of electrical operation. In other words, wiring, lighting, motors, controls and fittings were inadequate or unsafe in one way or another. In some of these finishing departments, adequate ventilation was maintained on the assumption that this was sufficient to eliminate the hazard of fire or explosion, but electrical authorities state that ventilation of finishing areas is not enough. Ignition of the fumes must also be prevented.

Electricity is indispensable to industrial finishing departments, but where it is not safeguarded there is an ever-present menace in the operating arcs that are caused by the making and breaking of circuits. It offers a dangerous source of ignition in the presence of paint fumes.

Speed Is Demanded in Modern Finishing Departments

Speed and more speed is the demand of those engaged in industrial finishing. Manufacturers of finishing materials are producing lacquers, varnishes, synthetics and spraying equipment that bake hard and fast at various temperatures, in a few minutes.

• The fine hand of real craftsmen may be eloquent in your product, yet it may lack the spark that ignites sales. That spark can often be added without mechanical or design changes by simply improving the finish. And improving the finish does not necessarily mean increasing cost.

Our creative studio . . . maintained as a service to manufacturers . . . has been helpful in stimulating the eye-appeal and sales-appeal of many products by creating better and more appropriate finishing schemes. Perhaps we can help you to step out and take the lead in your field!

Write us about your problem . . . there is no cost or obligation to reputable firms.

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Manufacturers of Finishing Materials
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EGYPTIAN HIGH BAKE N.F.R. comes in a large variety of colors as well as Black, White, and Clear . . . Colors are furnished in high gloss . . . Clear may be had in high or medium gloss . . . Excellent flexibility and adhesion.

Write for further information and recommendations regarding the use of EGYPTIAN HIGH BAKE N.F.R. for your own particular requirements.

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In many plants visited on this field of study, foremen finishers told us that they can now handle rush jobs with no tie-ups in production as was experienced only a few years ago when mixing, spraying and drying took much longer because manufacturers had not perfected equipment and materials for present-day standards. It is apparent from an inspection of many different finishes on metal, wood and compositions that beauty and durability have not been sacrificed on this altar of speed.

This speed, although advantageous from the standpoint of greater production at lower unit cost, has been a disadvantage from another source. It has increased explosion and fire hazards in product finishing. Where adequate methods have been taken to minimize these hazards, operating costs have been reduced through lower insurance rates; maintenance and delays caused by breakdowns have decreased to a negligible point; but our research discloses that about half the plants doing some sort of product finishing have failed to keep pace electrically with their industrial finishing processes.

What Is Dangerous and Where to Look for It

We have in mind one plant which might be termed a typical "guinea pig." Inside the spray booth hangs a drop cord with an unprotected lamp. The cord hangs over a metal frame. Just a little "short" is all that is needed to turn that spray booth into a blazing fire. Since chemists have developed quick-drying paints, short circuits in spray booths or over dip tanks are rec-

Plenty of light, shop cleanliness, and spray painting on the conveyor line are what you find in many factories today; but is the electrical equipment so safe that there will be no short circuits, overheating, sparks, or flashes?

ognized as one of the commonest hazards in industry. Familiarity breeds contempt and probably that is why those engaged in product finishing take chances that "those on the outside looking in" would get grey hairs over.

Lacquers, thinners and other chemicals carry a terrific wallop when mixed with air and high temperatures, or when their vapors happen to seep into the electrical system, contacting hot wires, shorts and arcs—bringing a serious menace to life and property. They produce vapor-laden atmospheres, dangerously inflammable. This survey brought to light many cases where finishing departments were harboring electrical firebugs, yet the management planned nothing to arrest them by the installation of safety electrical devices, such as explosion-proof fittings and wiring.

Explosion-proof electrical

equipment prevents flames breaking out from ignited gases and vapors, and also prevents sparks from escaping into the surrounding air. It is obtainable for motors, circuit-breakers, controllers, lamps, wiring, switches and other devices. When electrical equipment starts and stops, it breathes, sucking in and letting out air. Because it is impractical to utilize enclosures around electrical equipment that will exclude vapor from arcing or sparking parts in motors and other electrical devices, explosion-proof equipment that will withstand the detonation or combustion (bottling it up within the enclosures) snuffs out the flame before it does damage.

Masking and spraying are regular routine work here, but is the electric equipment just as good and just as safe? A fire or explosion would damage the plant, the product and possibly injure the operator.

In discussing this subject with foremen finishers, we find many of them erroneously assume that ample ventilation is sufficient to prevent fires and explosions from flammable liquids and gases, or other dangerous mixtures. They fail to consider that ignition is possible from abnormal electrical causes, such as insulation failure, faulty connectors, static, sparks, or hot wires and arcs, which can not be eliminated in the normal operation of controls and switches.

The safeguard is explosion-proof electrical equipment that renders explosions harmless when ignition occurs. Explosion-proof equipment is now available that will completely enclose motors, circuit breakers, controllers, switches, panels and lamps. Even electric push buttons, bells and telephone enclosures are available.

Manufacturers of this equipment, recognizing the increasing hazard that has accompanied the speedy finishing of endless streams of products of many sizes, shapes and forms, have perfected motors, wiring and other protective devices to handle the greater hazard. Product finishers will do well to make use of these modern devices that assure maximum safety to workers and property.

We inspected a number of spray booths and spray rooms that were the last word in cleanliness, equipment and working conditions, yet, switches, lights and other electrical devices, old in years and unprotected, might give the kiss of death to an over-

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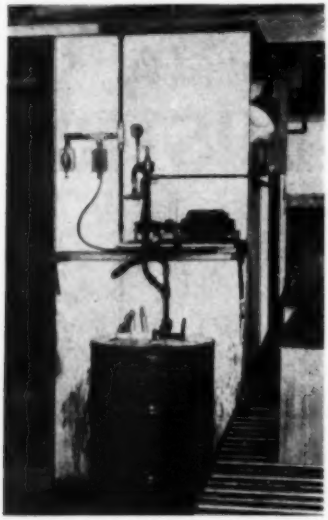


Circulating pump drawing material from shipping drum placed at side of spray booth. It is important that the electric equipment here, at the exhaust fans, and at the lights, should be just as modern and safe as the production facilities.

spray at any time. This statement isn't built upon the baseless fabric of a midsummer night's dream. Furniture factories have suffered disastrous fires which originated in the finishing room. Paint and varnish plant explosions with losses up to $500,000 and the death of workers have resulted from electrical firebugs. A spray paint explosion in an automobile body manufacturer's plant took nearly 100 lives. The records will disclose other case histories of flame and fury for those who care to delve into the facts.

Aside from the safety angle, there are other advantages of electrical modernization. Foremen finishers reported that departmental power bills were cut as much as 40% after adequate wiring and controls had been installed, replacing the jalopy equipment used formerly. Current expenses had been high before modernization because heat losses from inadequate wires and cables were high.

Some plants visited had been using the same wiring systems for years although plant additions and new processing equipment had been installed from time to time. The old wiring was not suited to the modern improvements, hence, there was much heat loss that sapped electrical energy before it reached ovens, automatic degreasers, washing machines, spray-painting equipment and other machinery that need electrical energy to turn out a modern job of product finishing. The more copper used in wire and cable, the less the lines are heated and the less the energy loss, so it pays to install conductors of ample fitness. Manufacturers of wire and cable have made many improvements to their products in recent years, which guarantee economical and uninterrupted operation. *(To be continued)*

New Furniture Plant in Illinois Will Use Patented Conveyor

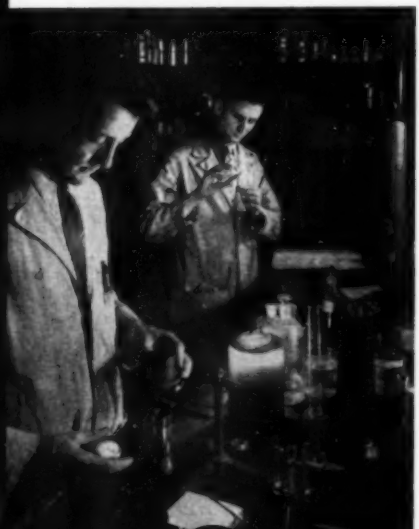
The Bellingham Furniture Manufacturers of Illinois, a stock company with management in Chicago and a plant at Libertyville, Ill., will have a finishing conveyor system like the one described and illustrated in December 1939 issue of INDUSTRIAL FINISHING, see pages 10 to 15. Patents are pending on this conveyor system, which was developed and first placed in operation by the Bellingham Furniture Mfrs., Inc., Bellingham, Wash. The above named furniture manufacturers, although having similar names, are separate companies.

Presenting a Review

of new and improved finishing materials for surface preparation, protection and decoration of manufactured products

Review of Improved and

SO MANY DEVELOPMENTS and improvements have occurred in materials for finishing, and in the methods and equipment used in their application, that even material manufacturers and laboratory men are familiar with only part of them. The highlights that one expert emphasizes are different from those that another mentions; and a third man will suggest still others—evidence of specialization in several different directions. Further, so numerous are the really first class developments that it is practically impossible to list them in the order of their relative importance to the industries that use finishing materials. But, to get to some of the outstanding facts and leading highlights quickly, here are a few of them:



Baking Enamels have made vast strides, not only in eliminating multicoat finishes but also in allowing the use of thinner films. White and light colored baking enamels, capable of producing a fine finish in a single thin coat, lead this group. Particular attention is called to:

1) The introduction of heat-resisting whites, enabling the stove manufacturer to further replace porcelain.

2) Further refinements in refrigerator whites.

3) Improved alkali resistance for the highly durable washing - machine enamels.

New Finishing Materials

See opposite page: Uniformity of quality is safeguarded by these physical tests.

Right: Accelerated tests for long performance under heat, cold and humidity are made in the Weather-Ometer.

Photographs, courtesy of Tousey Varnish Co.

4) The introduction of opalescent baking enamels, which have already been adopted in the automotive and plastic radio cabinet fields, and which, during 1940, will likely be used on many other products where a high-grade finish and a "different" color effect are desirable.

Hot Lacquers, particularly for the wood finishing trades, have made it possible to reduce the number and thickness of coats necessary for an approved finish.

The principle of heating a heavy-bodied material in order to lower the viscosity to an efficient spray weight is not new. Some finishers have used this method for many years, particularly with heavy-bodied enamels, wrinkles and other materials, where a heavy film is desirable on the work. However, it was not until special equipment was designed for heating and spraying finishing materials that a concerted effort has been made to adapt materials to the hot spray method. Several concerns can supply hot-spray lacquers.

So far, this method has been adapted to spraying clear lacquers and synthetics on furniture and burial caskets. With one type of hot spray lacquer it is claimed to be possible to equal the finish obtained with a coat of sealer and two coats of ordinary cold spray lacquer, in one spray coat. This finish is so high in solids and heavy in body that it is desirable to force dry it.

A second type of hot spray lacquer employs lower solids. It does not require force drying but should be applied over a regular cold spray lacquer sealer. One coat of the hot spray lacquer then takes the place of two coats of ordinary cold spray lacquer.

Dip-Spray Wrinkle Enamel. In a recently developed process for applying wrinkle enamel to rough castings, the castings are first dipped in a thin solution of the wrinkle finish, then placed on a rack to drain off the surplus enamel and allow the coating to set, and finally sprayed while the coating is still wet. This process insures complete surface coverage to seal the pores of the casting, and it cuts down the number of rejects, due to imperfect coverage, by as much as 20%. It also permits the use of rougher castings and saves from 25% to 40% of the finishing material required.

Novelty Finishes—stipples, wrinkles, spatters and similar types—have advanced considerably in presenting, in single-coat application, effects never possible before. The so-called "splatter" finish has been re-introduced with improvements in the color effects obtained and a reduction in cost of application.

Furniture Finishes. In the furniture field numerous installations of force-drying equipment have brought about additional development in both lacquers and varnishes to take advantage of this type of drying.

It is significant to note that more furniture factories are installing conveyor systems to move furniture through all the finishing and drying operations—and this calls for the use of rapid drying materials that produce dependable satisfactory results.

Wood fillers have been improved. The fast-drying nonshrinking type of synthetic filler has, in many instances, replaced

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One general point underlying several products, which has made strides during the past year, is the replacement of China wood oil, either completely or in part, in oleoresinous varnishes by dehydrated castor oil. This product had assumed very little commercial importance a year ago, but during this past year we have learned to make a better quality oil, with more complete dehydration, and have learned to formulate varnishes from it which are interesting and which have some valuable features.

Varnishes made from dehydrated castor oil are more elastic for the same oil length, their alkali resistance is not as good but their drying and water resistance properties are excellent, and color retention is good. Consequently, this material is entering a major role both on air-drying and baking finishes at this time.—J. S. L.

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the old slow-drying fillers of the past. There has been considerable development in primer-sealers and other combinations that perform double duty, previously requiring individual materials and separate application.

Another new type of material produced for the furniture industry during the past year is a fast-drying synthetic glaze or blending stain that can be coated over with lacquer or varnish in 10 minutes after it is applied. This new type glaze stain is applied and used in the ordinary way. It is especially useful on conveyor systems.

Synthetic Varnish. An advancement in the wood finishing field during the past year has been the development of a really workable synthetic varnish. Most of the synthetic varnishes of today are far different from those of yesterday. They contain more solids, have a better flow, dry much faster, and rub and polish nicely. The new type synthetic varnish can be force-dried (at an oven temperature of 150°F. with 35% relative humidity) for 1½ to 2 hours; then cooled from 1½ to 12 hours, and rubbed.

Some furniture manufacturers are using a varnish that can be rubbed one hour after coming from the oven. So, while in the past it required at least four days from the time a piece of furniture left the cabinet assembly room until it was ready to ship, today, with the fast-drying synthetic materials and modern conveyor system, it is possible to have a piece of furniture ready to ship in six to seven hours from the time it leaves the cabinet assembly room.

Serving industry with modern facilities.

Durable Decorative Coatings. The year 1939 has shown a marked advance in the durability and appearance of organic coatings. Home appliances, metal and wood furniture, machinery and equipment have been so finished as to far surpass any previous models. The general demand for greater economy and speed in finishing has resulted in the use of fewer and thinner coats of finishing materials, and more accelerated drying. However, this is not the whole story. An important point is the factors that have helped to produce these results.

One of these factors is the greater interest and appreciation of *the importance of properly prepared surfaces on which to apply the material.* More attention has been paid to metal cleaning and phosphate coating, and to the necessity of using top grade metal and wood. Another factor is the greater stress laid on control and methods. In the main, however, most of the credit be-

longs to manufacturers of finishing materials and equipment. No effort has been spared by them in testing new materials or in applying new ideas. The newly developed resins, pigments and solvents, have been carefully investigated in an effort to secure better materials at lower prices. Pioneer work has been done in developing and improving equipment, such as infra-red heating, paint-circulating systems, more efficient spray guns, and many others.

It is our prediction that organic finishing will make an impressive showing in the coming year, based on the accomplishments of 1939. The good work has begun; manufacturers and consumers of finishing equipment and materials have demonstrated that there are new ideas, and there will be further improvements in quality and substantial reductions in costs.

Steel ball mills used to make synthetics.

Modern Bake Finishes

"In 1939, a line of high-speed synthetic baking enamels was developed which seems to be about the last word in this class of finish. These enamels dry out of dust and bake hard in 5 minutes at 350°F. The resulting finish is exceedingly hard and durable; it is resistant to marring, moisture, and the action of household chemicals; the color retention is excellent; the gloss is lustrous; and paper printing, after the product is packed for shipment, is eliminated.

"These new enamels are supplied for use on all metals and Bakelite, and in all colors, with or without bronze powders. They are especially suitable for use on high-grade steel products subjected to severe service, such as refrigerators, washing machines, kitchen cabinets, etc."—G. K.

Burn Proof Clear Synthetic—Some of its outstanding characteristics, on most any metal, are: 1) Water white clear; 2) burn proof; 3) perspiration proof; 4) resistant to organic acid, caustic soda, and yellowing; 5) bakes at either 250°F. for one-half hour or 300°F. for 15 minutes.—118.

Synthetic Dipping Enamel No. 1904—Can be reduced for dipping with Varsol or light naphtha and then baked at 250°F. for one hour. Gives a hard marproof surface with excellent color retention in the lighter colors.—112.

Duracote Primer No. 69—A flexible, all-purpose primer that combines the following qualities: 1) A baking range extending from 30 minutes at 140°F., to 20 minutes at 275° F.; 2) does not require sanding; 3) has a coverage of approximately 1,000-sq.ft. per gallon; 4) will with-

New materials are grouped in the following four classifications:

Bake Finishes.....start page 38
Air-Drying Metal Finishes..... 44
Furniture Finishes 46
Miscellaneous 56
Too Late to Classify..... 60

Notice the identification number following each listed item. When you write for further information about any of the products, please refer to the code number.—Ed.

stand salt spray for 85 hours; 5) is extremely flexible under all normal conditions. Useful on a wide range of products, from castings to truck bodies.—198.

Kwick Bake Enamels—Baking time 10 to 15 minutes at 250°F., any shade. Porcelain-like finish; tough, flexible, durable.—108.

Wrinkle Finishes (C. C.)—Made in all colors and tints. May be had both in small fine structure and large coarse pattern. Material bakes out hard at from 250° to 275°F. for one hour.—110.

Yarlite—A synthetic enamel producing a beautiful, gloss, mar-proof finish of exceptional durability. Is hard and tough, and is available in white or colors. A short high-heat baking type with baking schedules to meet varying requirements. Has excellent adhesion to metal and generally does not require the use of a primer. Is recommended for all types of interior metal appliances.—105.

Codur Enamels — High-speed synthetic enamels of fine quality. Dry out of dust rapidly and can be baked in a few minutes to a fine finish that is exceedingly durable; resistant to marring, moisture, and the action of household chemicals. Produce a hard finish and have excellent color retention. After proper baking, no trouble will be experienced from "paper printing". Their use permits production to be speeded up without sacrificing the quality of the finish. Are made in the following grades: Grade HH20 and 24, for steel and certain other metals; Grade MH27, for Bakelite and many metals; Codur Metalustre, with bronze powders. Baking Schedule: 5 minutes at 350°F.; 10 @ 325°; 30 @ 300°; 60 @ 275°. The lower the baking temperature, the higher the gloss.

Coverage. Approximately 300-sq.-ft. per thinned gallon. Cover well in one coat or can be used over primer. Colors: White, black, most colors, and clear.—194.

Olive Green Enamels—These universally used materials have been kept up to the strides of the times and have adapted themselves readily to adjustments and developments in relation to short high-bakes, medium time and heat bakes to the low-heat bake schedules being demanded by manufacturers in this era.

These materials are examples of the advantages the use of urea-for-

I am sure that manufacturers of finishing materials, as a whole, have made great strides both in the development of new materials and in the improvement of older materials during 1939, and I am looking forward to still greater improvements during 1940. I am sure that despite the drastic increase in prices of most raw materials (used in the manufacture of finishing materials) that better finishing materials can be bought for less today than ever before.—H. W. C.

The progress that took place in the industrial finishing field during 1939 was largely in the direction of speeding up the application of high grade finishes in order to reduce production costs. This movement to eliminate the finishing room as a production bottleneck has been of major importance in the finishing industry for several years. It has been of the greatest interest to product manufacturers, and the manufacturers of finishes responded by turning out improvements in "high speed" finishes in rapid succession, while production engineers devised new methods of keeping the stream of products flowing continuously.—G. K.

maldehyde has given finished products. It is possible to obtain greater surface hardness resulting in more marproofness, a characteristic essential in this type of material, without sacrificing elasticity of film. In addition to this, the retention of color has been increased.—115.

Roller-Coating Baked Finishes No. 4991—A synthetic-type baking finish that can be reduced with mineral spirits. Flows out perfectly and bakes hard at 250°F. for one hour. Has excellent color retention and takes forming very well.—114.

Synthetic Brown Damaskene No. 3013—A newer type synthetic wrinkle, developed for absolute resistance to fouling in ovens. Forms a smooth even wrinkle texture and gives a hard finish after baking 250°F. for one hour. Developed primarily to withstand fouling in ovens that are in close proximity to degreasing tanks which have, in the past, produced a bluish haze on most wrinkle finishes.—113.

Baking Platelustre—A baking enamel that reproduces the colors of many metals. Any polished metal can be made to resemble brass, chemically-treated aluminum, steel, and other colored metals. When baked it is very durable and will resist the action of cleaning operations and also plating baths so that, when applied sectionally, a wide variety of effects is made possible. Flat stock finished with this enamel can be formed after baking. Two-color finishes can be obtained by "relieving" operations. Baking Platelustre can be applied to any kind of polished metal by spraying or roller coating. It is especially suitable for compacts, novelties, lighting fixtures, and many other products where a brilliantly colored metallic finish is wanted.—102.

Red Oxide Dipping Enamel for Coil Springs—A durable oil-base enamel for use on cold-drawn steel wire products, coil springs, coat hangers, etc. Reduce four parts enamel to one part turpentine substitute for dipping. Bake at 450°F. for 6 minutes, or air-dry overnight; available in dark colors. Can be made in dark oxide maroon, extra dark green and olive green.—111.

"Hammered" Duranite—An alcohol-proof and extremely tough durable finish; a protective and decorative coating for metal exposed to alcoholic beverages; in favor with the manufacturers of trays, table tops, etc.; impervious to solvents, and as such is useful on gasoline tanks for outboard motors where its humidity-resistance is another desirable characteristic.

"Hammered" Duranite is supplied as a clear liquid, to which the customer may add a specified amount of silver, copper, or other bronze powder, and apply with the usual spray equipment. The hammered effect is produced by spattering the work with a spatter thinner immediately after applying the Duranite. Baking schedules of 250°F. for one

hour, to 15 minutes at 350°F., may be employed; but for maximum alcohol-resistance one hour at 350°F. is recommended.

A wide variety of colors is available by the use of "Hammered" Duranite bases containing a certain amount of pigment. These are used in conjunction with the aluminum bronze, added at the time the material is to be used. Among the colors possible are gunmetal, statuary bronze, pastel blues, blue-greys, salmon, and others.—184.

Polydur Enamels—Synthetic enamels, with short baking schedules, developed to enable manufacturers to speed up production by reducing the time needed for finishing their products. Set out of dust in a few minutes. Baking schedules depend upon the temperature employed, but at 325°F., they bake to a fine finish without discoloration in 15 minutes. The finish is durable and resistant to marring, moisture and ordinary household chemicals. Supplied in white and all colors, for spraying or dipping.—101.

Baking "Glastint" — A synthetic coating for glass. Designed to produce colored glass effects on ordinary clear glass and glass building blocks. Combines a high degree of weather resistance and color fastness never before obtainable in translucent glass coatings. May be brushed or sprayed, but must be baked for maximum hardness and durability at a temperature of 250° to 300°F. from 20 minutes to one hour. Made in a variety of colors from rich red to amber. This new baking "Glastint" is a development of the ordinary air-dry "Glastint" developed last year for use on optical instruments, flood lights, etc., for colored light effects and absorption of certain light-ray wave lengths. Available in several degrees of light translucency.—188.

In our metal plant where we make the red coolers for Coca Cola, Cavalier Ranges, both gas and electric, Quaker Space Heaters and other stamped metal products, we have given considerable thought to high-baked synthetics, but in the main, materials have not changed much during the past year except in the baking time which has been reduced somewhat.—J. M. A.

Filling drums with material for shipment.

Polymerin-100 — Has exceptionally low-temperature speed baking characteristics. Follows the original Polymerin, a speed-bake finish introduced in 1938 which requires relatively high baking temperatures. The Polymerin-100 formulation, however, makes possible curing temperatures which are often as much as 100° below those of Polymerin, thus extending this type of speed finish to the low-bake field.

Has remarkable qualities of resistance and durability . . . . excellent film hardness, luster, build, adhesion, toughness, hiding power, and color retention. Resists the common deteriorants. Its general characteristics of permanence, plus its low-

It is my opinion that the greatest development in industrial enamels in the near future will be improving the curing rate or polymerization time factor which will give harder finishes sooner or hard finishes at low heat. This latter improvement is one we are particularly interested in, because it increases immediately the scope of application, namely, composition materials that are now affected by heats of 250° to 300°F, but are not materially altered at 150° to 200°F.—J. H. G.

temperature, speed baking schedules distinguish it from conventional synthetic finishes.

The exact baking temperatures required by Polymerin-100 depend on the type and size of the oven, the mass of metal involved, and other factors, but its curing temperatures are low for a speed-baking finish with equal properties of adhesion, flexibility, color retention, and toughness.—103.

Duotone (Bake Finish)—A new baking metal-finishing material that meets industrial utility, economic, and appearance demands. Designed specially for use on various grades of metals, it produces a uniform 2-tone effect in one spray application. Available in a wide variety of colors; applicable to a wide diversification of production.

Merits claimed for Duotone are: 1) Stability. It is easy to apply, unaffected by varying oven conditions, and produces a consistently uniform finish. 2) Economy. Rejections minimized; coverage per gallon, excellent. 3) Product appeal; attractive in appearance.—116.

Polymeroid—A new marproof hammered-effect finish designed especially for use on rough or porous metals. Will cover defects in the metal, such as spot weld marks and file scratches, and while it has the effect of a rough finish, its surface is actually smooth. Has excellent heat resistance, durability, and adhesion. May be baked on a short schedule.

Although two operations are involved in its application, Polymeroid is essentially a one-coat finish. The first coat is applied with a spray gun. While this is still wet, another coat, usually nothing but solvent, is sprayed on. This second coat causes the hammered appearance which gives the effect of a rough finish, thus hiding any metal defects that may be present. The uniformity of this hammered pattern can be closely controlled. Since the surface is actually smooth, although uneven in appearance, it will not attract dust. Polymeroid has remarkable mileage. Available in all colors, and it can be furnished with a high gloss.—104.

Low Bake Wrinkle Finish—A line of wrinkle finishes in all colors, for baking at low temperatures. Baking schedule at 180°F. for 2½ hours places these finishes within the scope of steam oven range. These wrinkle finishes bake to a hard wear-resisting quality and have excellent appearance in all colors.—107.

We can look for many changes in finishing procedures and the greater use of finishes that allow a faster finishing schedule without sacrificing quality. Short-bake synthetics will undoubtedly find much greater use, especially in plants where oven capacity is set for normal requirements. Finishing schedules that call for two or three coats will often be discarded for a single coat finish such as wrinkle. The users of wrinkle finishes can double their output by the "Dipspray" method—where this method can be used on the articles being finished.—J. A. B.

Baking Enamel—By far the most important single advancement is the diversified use of urea-formaldehyde resins in conjunction with alhyol resins, plasticizing oil resins and phenol modified oil extended resins. The most plausible explanation for successful use of urea-formaldehyde resins in low concentration (3% to 8%) is the unsuspected universal solubility of this type resin in the above mentioned resins, imparting improved working properties to the enamels.—J. H. G.

Varlast—A synthetic baking enamel designed to give maximum gloss and color retention upon exterior exposure. Is elastic and tough; withstands use and abuse; and has excellent resistance to gasoline, grease, and water. Available in white and colors; recommended for metal products that are subjected to exterior exposure.—106.

UltraKote Synthetic—Can be used on any production metal, ranging from the manufacture of delicate jewelry to heavy machinery, including metal kitchen cabinets, stoves, refrigerators, ironers, washing machines, flashlights, clocks, office machine equipment, lamps, locks, and bathroom fixtures. Provides a hard chip-proof surface having the appearance of porcelain and is much tougher, thus saving chipped merchandise. Can be applied by the spray, dip, or roller-coat machine. A metal panel finished with this material can be bent double. When applied to castings, a specially designed undercoat can be baked in one operation with the topcoat, instead of the usual two baking schedules.

Available in water-white clear or in any color. The clear is really water-white and non-yellowing, and the whites will actually withstand elevated temperatures. Quick baking time at low temperatures represents a substantial saving.—119.

In enamel making—motor-driven mixers.

High Short Bake U. F. Enamels—Made in all colors and tints. Material reduces four to one with coal-tar thinners. Quick initial set, eliminating dirty surfaces. Bakes at 275°F. for 30 minutes. Has unusually good adhesion to Bakelite and is very resistant to acid, alkali and salt spray tests. Gives porcelain-like finish.—109.

Vitra-Carlite Finishes — Synthetic resin products which, baked at 300° F. for 20 minutes, give films that are glossy, porcelain-like in appearance, tough, hard and marproof. These finishes are elastic; they have good adhesion to aluminum, brass, cast iron, chromium, copper, galvaneel, galvanized iron, steel, tin and zinc. Colors remain bright.

These finishes have fair outside durability. They are unaffected by gasoline, mineral spirits, machine oil, grease, liquor, 50% alcohol, cos-

metics, hair tonics, oxalic and citric acids. Vitra-Carlite gives a very good finish in one coat on smooth metals. A more durable finish is obtained when the material is used over an undercoat—gray primer-surfacer or gray primer, depending on condition of the surface. An enamel that permits increased production with present oven facilities—100.

Air-Drying Metal Finishes

Lacquers, synthetics and other types of material are included in this group; primers, top coats and one-coat finishes in colors and clears for interior and exterior exposure. They are chiefly noted for such characteristics as excellent adhesion, smooth flowing, lasting flexibility, extensive coverage, permanent color retention and remarkable durability.

M-1402 Clear Silver Lacquer—Water-white in color; intended for use on all bright plated surfaces. Has tenacious adhesion, and stands engraving.—121.

No. XL-2964 Water White Gloss Lacquer—Absolutely colorless. Can be used over colors for clear coat, or on polished or stainless steel.—193.

Casket Finishing System (C. C.)—Complete finishing system for casket manufacturers. For either mass production schedules or small finishing rooms. Primer reduces 50/50 with lacquer thinner and can be sanded in 30 minutes. Has unusual adhesion, good filling, and "holding out" of succeeding coats. Bronze lacquer reduces 2 to 3 with lacquer thinner. Leafs bronze powders out uniformly, giving a brilliant finish, eliminating any spotting or gray dull effects. Top coat lacquer reduces 50/50 with lacquer thinner, giving brilliant, full-depth finish. Rubs and polishes very easily. Very pale and clear in color.—124.

Synthetic enamel has made great headway but there is still a lot of room for improvement before it can take the place of lacquer; the reasons are too numerous to mention here.—R. D.

M-1410 Clear Metal Lacquer—Intended for use on brass, copper, cadmium and general run of plated surfaces. Possesses remarkable elasticity and durability.—120.

No. XL-2850 Lacquer—A gloss finish marine-type lacquer. Automotive use or any type of outside exposure. Give full luster with polishing.—192.

High-Heat Resistant Aluminum Paint (F. & C.)—Can be reduced 100% with gasoline or similar fast evaporating solvents. Will air-dry in two to three minutes, and is particularly adapted to use on furnace fronts.—126.

Lacquer Bronzing Liquid No. 68—Holds in solution with any gold, silver or copper bronze, without reacting. Reduces 150% with thinner for spray application. Withstands 200 hours of salt spray without the finish being affected.—200.

6-1181 Semi-Gloss Black Lacquer—A truly black, semi-gloss lacquer; characterized by splendid adhesion to clean, bare metal. Suitable for dipping as well as spraying. When thinned for dipping, does not lose its jet-black tone. Has splendid build and is economical.—185.

Festex (Hammer Effect) Finish—Very attractive, giving an effect similar to hammered metal but permitting the use of a variety of colors. It is almost foolproof in application and, should a defect occur . . . . being marred due to handling or packing, it lends itself readily to patching. Can be used directly over cleaned, unprepared, rough surfaces.

Has surprisingly good square foot coverage. Used on radios, heat registers, automatic stoker units, metal advertising novelties, etc.—125.

Pyra-Prep—A pyroxylin undercoat for use under automotive Pyralux. Is light gray in color and is intended especially for use under automotive Pyralux to prevent "sinking in" and to obtain uniform gloss. Is packaged in quarts, gallons and 5-gallon cans.—128.

Ebonblak—A black pyroxylin enamel for automotive touch-up and spot repair work where speed rubbing is necessary. Is a quicker and harder drying black which may be rubbed in a short time after application, without taking on a gray tone. May be reduced two to one and is packaged in quarts, gallons and 5-gallon cans.—127.

Franzite (Fast Air-Dry Synthetic)—Has excellent hiding power, gives high gloss in one coat, and air-dries hard overnight. Sets in 20 minutes and dries to touch in 45 minutes. Is relatively elastic and has good adhesion to wood, steel and many other surfaces. Colors remain bright. Specially suitable for concerns that lack baking facilities but who want to ship their goods in 24 hours.—123.

Crank-Case Sealer—Stands immersion in lubricating oils for four hours at 350°F., and is claimed to be unaffected by refrigerants. Does not chip or flake under sharp knocks and severe abrasion; air-dries in regular lacquer time and is applied easily by spraying or flow-coating. Seals-in any sand particles that may remain in the castings. It is colored red to insure complete coverage, but contains no abrasive pigments.—175.

The advent of urea formaldehyde, in conjunction with the infra-red baking or curing, will revolutionize schedules of application from a standpoint of quantity production and result in a finish far superior to results obtained prior to the introduction of these two outstanding achievements.—C. G. M.

White Metal Lacquer Enamel—For one-coat covering of bare metal to give complete hiding and weather resistance in a single coat by spray application. High gloss with exceptional non-yellowing characteristics. Moistureproof and has an exceptional degree of hardness obtained by use of new urea resins and accelerator. Same finish is also available in pastel tints and a few other colors.—190.

Chromelume No. 1—A ready-mixed aluminum that combines the following qualities: 1) Extreme brilliance; 2) 15-minute air-dry; 3) will not rub off after aging; 4) covers 2,000-sq.ft. per gallon; 5) will not settle or pack in tank or container; 6) can be dipped, sprayed or flow-coated; 7) retains its brilliance indefinitely.

Other chromelumes are available for special purposes such as outside durability, water immersion, heat resistance, etc.—199.

Perhaps the most outstanding point of interest in the paint industry in the past year, both from a manufacturer's and a consumer's standpoint, is the refinement of urea formaldehyde for use in paint formulation. The introduction of a percentage of this product in formulations has made products that have greater color retention, greater elasticity, greater marproofing and require shorter lower heat bakes. In addition to all these features, it is reducing the demand for use of China Wood Oil, the fluctuating price of which has perpetually disturbed the paint industry.—C. G. M.

Furniture Finishes

"The 1940 furniture barometer forecasts unsual activity. A combination of trends affords broad opportunities for design as well as finish. The noticeable 'softening' of modern lines and finishes, to blend more closely with conventional, and the definite departure from straight-laced period designs and somber finishes—these trends combine to offer the compromise creations a place in the home of today. The trend toward 'mixing' has already reached a point where scarcely a single living room is shown—regardless of how truly Colonial or Early American it is—without at least a touch of Modern being included. In some cases it may be only a bleached or toasted finish on one or two period pieces; in others it may be a modern item toned in design and finish to add a bit of life. Also, we frequently notice the addition of a few traditional pieces to each Modern ensemble.

"During 1940, it will be both smart and profitable to give greater consideration to the manufacturers of finishes who strive more for quality and new trends in color and effect, rather than the low-price source."—V. J. D.

A new finish which is expected to have far-reaching effects on present-day wood finishing methods due to the fact that it replaces three coats with one, was announced in 1939. The new finish, by a new formula and application procedure, requires but one-fourth the time for complete finishing compared with previous methods—according to the manufacturer. Furthermore, the announcement states, this single application uses about one-half the solids needed previously to provide a "full" finish. No sealer is required before application and the fact that several coats are not required means that the figure and color of the wood is actually enhanced.

DuBar Bleach—Not a new development this year, but a major improvement has been made in its working properties. DuBar is now odorless. May be applied in a single application and it is more powerful and uniform in bleaching properties.—151.

Blanchit (Wood Bleach)—A compound for bleaching the natural color from new or old cabinet and furniture woods. Application is simple, although it is advisable for the operator to wear rubber gloves.

Use brush or swab to put on No. 1 solution. Allow it to stand four to six minutes; then wipe from the surface with dry cloth. While the surface is still moist, apply No. 2 solution with separate brush or sponge, and allow work to dry thoroughly. Then remove with sandpaper the slight scale which forms. Fiber brushes are available.

On refinishing work, old finishes are removed in usual manner with varnish remover, and sanded. The work is allowed to thoroughly dry, after which No. 1 solution and No. 2 solution are applied as mentioned in the above paragraph. If aniline stains still show in the wood, mahogany stain remover can be used as a wash. Any ordinary finishing material can be applied to surfaces after this process because No. 2 solution is a complete neutralizer, preventing any chemical reaction under finishing materials.—152.

Super Glazing Colors and Wiping Oil Stains—Developed to banish one of the "dead spots" in present-day furniture finishing; namely, that 18 to 24-hour time-lapse between glaz-

ing and coating. They dry bone hard within two hours after blending, but allow more than average time for blending. They are adaptable to any finishing room routine and may be had in all regular shades, or can be made to match individual or special shades.—179.

Pigment Wiping Stains (C. C.)—All permanent colors. Exceptional uniforming and ease of wiping. Reduces up to 200%. Can be used with either dip or spray application.—129.

Wateroil Stains (Improved)—Lightfast, non-grain-raising, quick-drying and non-bleeding. Shipped in regular metal drums without changing color or precipitating. Absolute water colors clearest stains available. Can be coated in 30 minutes without sanding.—176.

U. P. S. Stains—Meaning uniformity, permanence and stability. These new stains produce a permanent color, dry rapidly and are supplied in four concentrated primaries, concentrated stain of color selected, or ready-to-use stains. These stains are economical to use and fit well into rapid production schedule.—122.

Zatone Stain—A water-soluble stain incorporating solids to approximate a stain sealer effect. Prevents, to a marked degree, excessive grain raising. Gives good color clarity; good light-resistance; good color uniformity. Tends to eliminate wood fiber tear-outs. May be obtained as a clear base, to which the manufacturer can add his own water-soluble stain.—182.

Fiber-Wood Filler—Will eliminate an extra coat. Designed primarily for use on composition and pressed fiber surfaces, it improves the adhesion of primer coats and serves the purpose of a regular building coat. For use on Masonite, Tylac, Celotex, etc.; improves the finish on these products.—178.

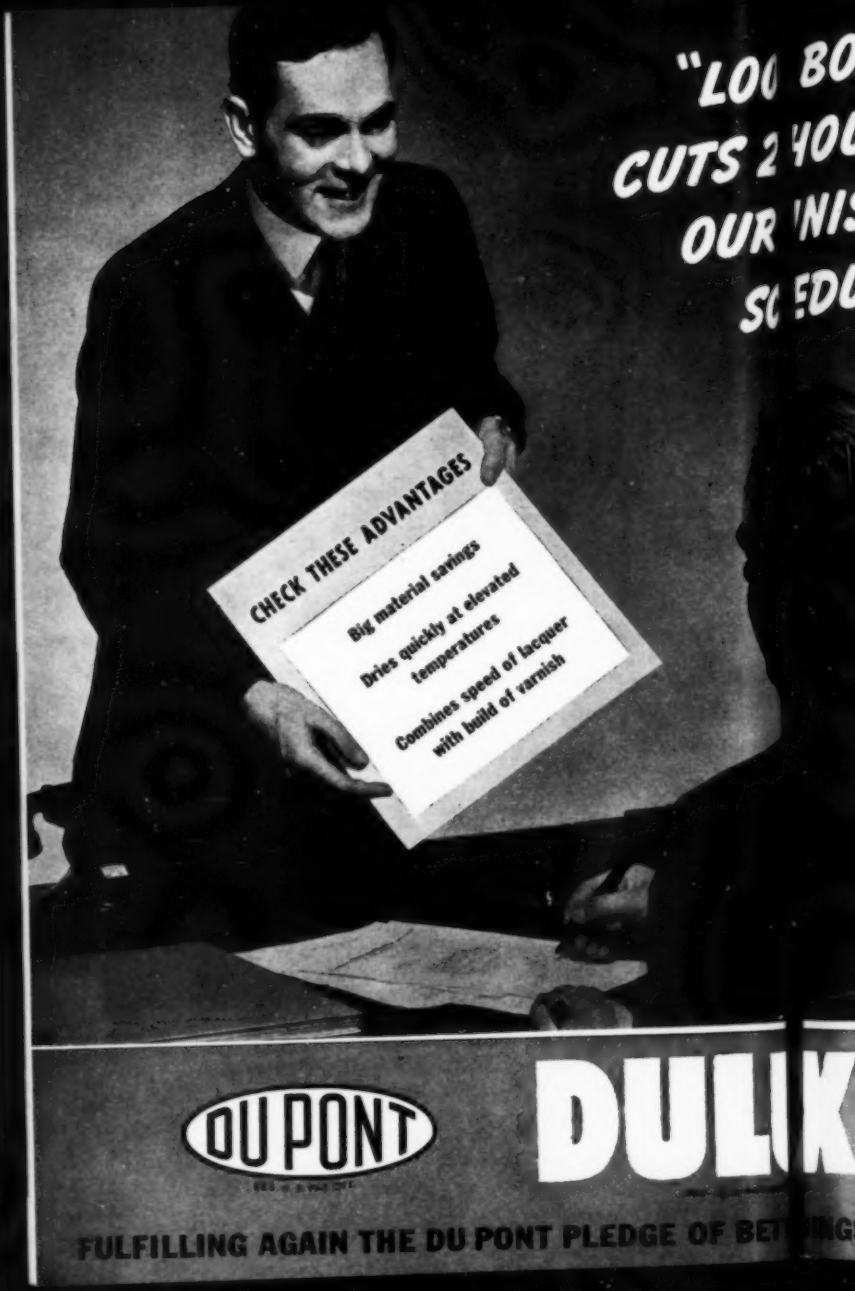
Nu-Glaze—Here is an item which will so completely change the work involved in highest grade glazing or blending that time and effort in this operation will be reduced at least 50%. Made on an entirely new principle. The pigment colors are so finely ground that they actually permit of blending as finely as anilines. Absolutely no grit or rough particles remain on the surface.

A pigment wiping stain has been developed that combines earth pigments and water dyes, resulting in easier wiping and in clearer and more permanent tones; also stronger staining qualities. The water dyes are emulsified and added to the regular vehicle.—F. R. B.

Finishing furniture and woodwork correctly by the conveyor system method, with thermostatically-controlled heat ovens, has created many problems to obtain the greatest economy.

Special stains, fillers and other finishing materials have had to be designed to meet these exacting requirements. This has necessitated intensive research and extensive actual practical production tests.

The method of applying, the drying times allotted, the heat temperatures ranging from 110° to 140° F., with the controlled relative humidities, and the toughness and flexibility of the final finish, all involve many problems. Our laboratories have pioneered in this field. We are manufacturing all types of stains, fillers, first coaters, sealers, lacquers and varnishes that are used successfully in both large and medium sized plants.—222.


"LOO BO
CUTS 2 HOU
OUR 'NIS
SC EDU
CHECK THESE ADVANTAGES
Big material savings
Dries quickly at elevated temperatures
Combines speed of lacquer with build of varnish
DU PONT
DULI
FULFILLING AGAIN THE DU PONT PLEDGE OF BE

This DULUX finish for furniture ...combines speed and quality of lacquer and flow and build of varnish... cuts finishing costs sensationally!

DULUX for furniture is made to dry on an elevated temperature drying schedule of only a *few hours.* (2 hours at 150°). This fast drying, plus other qualities, offers you a 5½-7½ *hour* finishing schedule from sealer to packer. Compare *this* with the 29-43 hour schedule for varnish, or the 22-28 hour schedule for lacquer!

DULUX has a clear, beautiful film with excellent depth of appearance. Its unusual build means that you need apply only *one* coat, instead of the two coats usually required by lacquer. Material savings up to 30% are possible. DULUX also saves time because it is easy to rub.

DULUX has excellent print and water resistance, as well as resistance to alcohol, marring and scratching and cold cracking.

Investigate this remarkable new production-speeding finish! For full information, just write to E. I. du Pont de Nemours & Co. (Inc.), Finishes Div., Wilmington, Del. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.

DU PONT ON THE AIR—Listen to "The Cavalcade of America" every Tuesday, 9 p. m. E. S. T. over National Broadcasting Company Networks.

LUX FOR FURNITURE

BETTER THINGS FOR BETTER LIVING THROUGH CHEMISTRY

Due to the trend toward lighter finishes during the past year, and because some manufacturers are trying to use a lower grade of lumber because of price increases in lumber, a new type lacquer uniforming gum-wood enamel, in color, has been brought out. This enamel uniforms the gum to match the veneers on the suite, thus enabling the use on cheaper gum wood. This enamel is applied directly on the wood and then finished over in the regular way. It removes all black and colored spots in the gumwood.—H. W. C.

Brushes so smoothly and easily that the effort is greatly minimized. Nu-Glaze "tacks," sets, and dries exactly as it should and eliminates all "blending" problems.—153.

Nuoil Fillers—Easy to use, wipe easily, fill perfectly; give supreme satisfaction where high grade work is required.—177.

QS-679 Black Baking Wood Filler—Developed as a dipping filler to be applied to various types of wood handles. Reduces with naphtha, and bakes for two hours at 200°F., or one hour at 250°F. Will not settle in the dip-tank. Gives excellent filling, and provides a firm base for succeeding finishing coats.—181.

Liquifil—A further development in the treatment of wood to impart a natural and attractive color effect.

Particularly adaptable for mahogany, walnut and other open pore woods; colors the wood and fills the pores at the same time. Liquifil goes a step farther than Triplex stain, which does not contain actual filling ingredients and is intended for close-grained woods such as maple, gum, birch, etc.

Both Liquifil and Triplex stain contain a penetrating ingredient which gives a rich, warm undertone and a uniforming medium which permits highlighting and insures an attractive color throughout the piece being finished. Liquifil has the additional ingredients which permit it to produce a complete filling and staining job on open-pore woods in one application, without sacrificing any of the qualities required on high grade work.

Liquifil may be applied by spraying at a low air pressure at the gun, not over 25 pounds. It may be applied by dipping, but best results are obtained if the material is brushed on. It may be applied like any paste wood filler with a full brush and across the grain. Then it should be allowed to set up until pasty, and the surplus rubbed off across the grain, and the surface cleaned up with a soft cloth.

Liquifil may be recoated within one hour, if desired, although a little longer time is desirable. Shellac, lacquer sealer or any of the usual undercoats may then be applied and followed with either lacquer or varnish as finishing coats.—142.

One Hour Sanding Sealer No. 3303—A fast-drying elastic sealer with excellent filling qualities. Contains 25% solids. May be sanded one hour after application; may be recoated immediately after sanding; will not clog No. 6/0 sandpaper.—130.

Satinol Sta-Dull French—A product used similarly to Nu Glo Finish, but can be steelwooled down and will stay dull after being rubbed down with steel wool.—145.

Super Solids Sealer—A new development in lacquer sanding sealers for wood furniture. Contains 24% solids at the gun without heating. Embodies higher bridging qualities than are usually found in lacquer-type sealers, and can be sanded within 20 minutes after application. Recommended for use under either varnish or lacquers. The high cold-check resistance of this sealer makes

it especially desirable to use where speed with maximum endurance values are desired. It can, of course, be reduced further where greater economy of finish is desired.—191.

High-Solids Lacquer Sanding Sealer—A furniture production sealer excellent for conveyor work. Can be reduced to meet individual production requirements. Has extraordinary filling, building covering properties, sands easily, does not clog, reduces sanding operation cost.—196.

Sealtone—A high grade (licensed or unlicensed) sealer in combination with water colors. Not to be confused with ordinary "colored sealers" wherein oil colors or asphaltums furnish the color. Contains light-fast water-soluble anilines and definitely stains and seals in a single operation. Fillers or glazes may be applied directly over it.—175.

S-1230 Lacquer Sanding Sealer—A production sealer for use under W-1055 Gloss and F-1656 Flat Wood Lacquers (described in following paragraphs). Ready for spraying with 18% solids. Dries for sanding within 20 minutes and does not "gum" paper. Excellent filling qualities.—180.

Yarseal—A completely penetrating finish that forms an integral part of the wood, leaving no surface film and drying quickly to a beautiful, permanent, protective, waterproof, scratch-proof, dull finish. Tends to prevent the wood from splintering, warping, or discoloring, and resists dust and dirt accumulation. Available in clear and five natural wood shades. Recommended as a finish or prime coat for wood.—143.

For surfaces that are to be painted or enameled, synthetic primers are taking the place of the lacquer type, due to their better adhesion and flexibility. Bleached surfaces are more popular in the darker shades.—F. R. B.

No. 594 Lacquer Sealer, No. 595 Gloss Lacquer and No. 596 Flat Lacquer.—Some new lacquer materials for the furniture industry. These materials are exceptionally resistant to hot water, hot dishes, cold water, alcohol, oil heated to 340°F. and poured on surface, extreme changes in temperature, printing.—132.

Penetrating Primer (D. C.)—A primer developed especially for use in finishing wood furniture. Designed to replace sanding sealers as first coats, this primer forms a tight deep bond between the wood and finish, thus giving unusually fine adhesion. In addition, it possesses exceptional scratch resistance, making furniture much harder to scratch white.—131.

Dulux Clear Furniture Finish—A clear furniture finish combining the speed and quality of lacquer with the build of varnish.

Made to dry at elevated temperatures, this product offers finishing schedules, from sealer to packing, ranging between 5½ to 7½ hours at

I think the biggest single improvement in wood finishing materials during the past year has been in wood filler. The old type fillers contained linseed oil, slow-drying thinners and binders, and they required from 12 to 36 hours to dry thoroughly. The new type synthetic fast-dry fillers (which contain synthetic oils and binders) can be force-dried for 1½ to 2 hours and cooled for 30 to 45 minutes, and then coated over in the regular way. This effects a substantial reduction in the time required for finishing.—H. W. C.

150°F., compared with the usual 22 to 28 hours schedule for air-drying lacquers and the 29 to 43 hours required for varnishes. Having a build that necessitates only one coat over sealer (thus effecting savings on material and the time required for preparation and application of second coat) it flows as easily as varnish and deposits a film that has excellent depth of appearance.

It gives furniture remarkable "retained beauty," and is resistant to yellowing, darkening, and alcohol spillage. In addition, its resistance to water, scratching, cold cracking, and printing is comparable to lacquers and superior to varnishes.—140.

Alcohol Resistant Wood Lacquer No. 3404—Similar to the No. 3401 Gloss Rubbing Lacquer. Has slightly less gloss and cold-check resistance, but possesses exceptional alcohol resistance; its film is only temporarily affected by contact with 100 proof alcohol for an hour. Contains 21½% solids. For best results, apply two to three coats.—139.

"Perma Veneer" Clear Lacquer—A synthetic resin furniture lacquer that delivers 27% solids at the gun at ordinary room temperature, without special equipment. Is extremely valuable to those concerns that desire a high build with a single finishing lacquer coat. May be rubbed within the usual lacquer drying time. Because of new resins used in the formulation, it has unusually high resistance to cold checking, water, alcohol and perspiration. This same material is available in flat and semi-flat, where rubbing is not desired, but the resistance qualities of the flat are not quite as high as the clear. Shipped at spray viscosity, containing 27% solids.—187.

Gloss Rubbing Wood Lacquer No. 3401—Rubs and polishes easily to a high gloss with great depth and clarity. Contains 21% solids; gives a tough film which has exceptional cold-check resistance. Articles may be packed three to four hours after rubbing. For best results, apply two to three coats.—138.

Guardsman Finish—A beautiful, hard, tough, durable finish for furniture; highly resistant to mars, scratches, alcoholic beverages, hot dishes. Manufacturer's specification includes complete finishing system—staining, filling, highlighting or antiquing, sealing, finish coating, rubbing and waxing.—141.

Tops Enamels—Available in all colors. Heavy-bodied, tough, air-drying. Applicable to wood, metal, fiber products, Masonite, etc. Exceptionally tough, durable, wear-resisting, smooth and light-fast.—148.

Flo-Smooth Lacquer—Basically, this product differs from regular lacquer in that it is made without the use of any low-priced solvents or diluents. By eliminating the fast-evaporating diluents, which cause ordinary lacquers to "set" before they have had time to flow out smoothly, we have succeeded in producing lacquers which remain free to flow smooth and as a consequence they require less rubbing. Flo-Smooth lacquers are highly resistant to alcohol, boiling water and various chemicals; also resistant to hot or cold checking. They are tough,

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"Dear Ed: In the fourth paragraph of your letter are a few words that standout to me and if I were a writer I would like to write something with the heading: 'Attention Finish Users!' Yes and some of them ought to be arrested for building a good kitchen cabinet or other furniture and covering it with a cheap finish. Some seem to forget that it's the finish that sells their product, and for the few cents difference they can get a better grade of paint."—R. D.

Due to their durability and because much furniture is shipped in compact cartons, lacquers have been widely used during the past year but because of their thin coverage and price in comparison to varnish, some manufacturers of the cheaper grades of furniture cannot afford to use them. So I think the trend toward baked synthetic finishes will grow rapidly and will make more progress this year.—H. W. C.

heavy-bodied, and do not scratch white. May be obtained in either 21% or 27% solids.

Because of the fact the flow is more perfect, naturally there is less variation between high and low spots of film and this, in turn, would make apparent the fact that less rubbing would be required to produce the finish and because less of the lacquer is rubbed off, more remains and produces a superior heavier film.—146.

Nu Glo Finish—When used, will produce a high luster, immediately after the french polishing pad has been removed from it. This leaves a high-class durable furniture finish. —144.

Cold-Check-Resisting Lacquers—Daconite Cold-Check-Resisting lacquers were developed because of the more severe demands of the furniture industry and its requirements for more body, better alcohol or spirit resistance and definitely better resistant to cold checking. All of the film-forming materials are tested at 120°F. above zero and 20°F. below zero. A test cycle includes two hours in the warm chamber, followed immediately by two hours in the cold chamber. The number of cycles a lacquer film will withstand is a definite measure of its elasticity and resistance against cold checking. Daconite Cold-Check-Resisting lacquer has been repeatedly found to withstand in excess of 12 cycles. This is in comparison with the type of lacquers in general use only a short time ago which rarely withstood more than two cycles.

Careful testing included experiments on veneered and solid woods with uniformly good results. In addition to high cold check resistance, Daconite Lacquer of this type produces a body closely approaching a varnish effect.

It sprays easily, flows out smoothly, rubs easily and polishes readily without absorbing rubbing oil; consequently, it does not bloom or turn gray. Effectively resists alcoholic liquors and can be furnished in a form which withstands straight alcohol.—136.

W-1055 Gloss Wood Lacquer—Furnished ready for spraying with a solid content of 37%. May be rubbed and polished after overnight drying. One coat over S-1230 Lacquer Sanding Sealer produces a high build and beautiful finish. Alcohol resistant and stands cold-check test.—149.

F-1656 Flat Wood Lacquer—Possesses same excellent qualities as W-1055 Gloss Wood Lacquer. Contains 37% solids, ready for spraying. One coat over S-1230 Lacquer Sanding Sealer produces pleasing, full-bodied alcohol-resistant finish.—150.

Wood Lacquers (Non-Royalty)—A complete line of non-royalty wood lacquers, comprising sanding sealer, gloss and flat lacquers. These lacquers will fit many of the standard finishing schedules now in use; for example, one coat of sealer and two coats of gloss clear for high gloss finish; or a coat of sealer and a coat of gloss and a coat of flat for a full flat finish.—137.

W. P. Hot Lacquer—A low-viscosity high-solids nitrocellulose lacquer formulated to be sprayed at temperatures of 140°F. or more. Heat thins the "heavy" lacquer so it can be sprayed effectively and will readily

flow out to produce a smooth lustrous coating of uniform thickness —giving, in one coat, the equal in film thickness of two or three coats of thinned lacquer sprayed cold. The heated lacquer cools immediately to room temperature. The film produced is tough, hard, durable, smooth, and lustrous.

Perhaps the most obvious and outstanding favorable property of hot lacquer is its exceptional flow, particularly on furniture; the flow being so exceptional that "flat and semi-gloss" lacquers actually present the appearance of having been rubbed.—135.

H. T. A. Zaponite — A one-coat furniture finish that is heated and sprayed at a temperature of 170° to 180°F. at the spray gun nozzle. Its purpose is to provide a high-quality durable finish, and to accomplish in one coat what formerly required three coats of material. Even the usual sealer coat is dispensed with.

The material is applied in a single spray application (sometimes in one pass of the spray gun; sometimes in two successive passes) to give a full rubbing body. The finish is anchored directly to the wood and it is highly resistant to scratches or mars. Produces a full-depth finish; may be applied directly from the shipping drum or through the present distributing system. A specially designed circulating heat unit is put into the line to heat the material for hot spraying.

After the single application (one or two passes) the finished surfaces are allowed to air-dry for one-half hour. The work is then placed in a dry kiln for two hours, where it is force-dried at temperatures varying from 125° to 140°F. Humidity control is not essential to properly cure this new finish. Upon removal from the kiln, the finished products are allowed to cool for one-half hour, after which they are ready for rubbing and polishing.

This new finish is available in gloss, semi-gloss and flat sheens. The full gloss finish is generally applied where the surface is to be rubbed and polished. Upon completion of these operations the finished products may be packed immediately, with assurance that there will be no shrinkage or "printing" of the film afterward. This finish will pass a pressure print test at temperatures up to 150°F.—133.

The mahogany desk has antique leather inlay on top. The mahogany arm chair is upholstered with satin striped damask.

Hot-Spray Lacquer (P&S) — Contains the maximum solid content permissible in royalty-type wood lacquers. Designed for application at a temperature of 140°F. Produces a finish in two coats which will have the same film thickness (body-on-the-work) as a 3-coat finish of conventional lacquer, applied cold. In addition to the material (lacquer) saving of approximately 30%, there is an additional economy in labor and handling through the elimination of one coat of lacquer.

The solvent or volatile portion of P & S Hot-Spray Lacquer contains more expensive, higher-boiling solvents than the corresponding cold spray lacquer. This allows a proper

"set-up" for the hot lacquer, promotes good flowing, eliminates blushing, pin-holing and dry overspray.

No reduction with thinner is required. P & S Hot-Spray Lacquer (clear gloss) is reduced to spraying consistency by raising the temperature of the lacquer to 140°F. P & S Hot-Spray Lacquer (semi-gloss) must not be heated above 130°F. for spray application. Allow 45 minutes between coats. Air-dry last coat 12 to 16 hours at room temperature before rubbing. Rub with water and pumice stone, or with oil and pumice stone. To produce a high-gloss finish, follow rubbing operation with polishing compound.—134.

Dri-Dark Rubbing Compound — A real rubbing compound that will not show white in routings or corners after drying. Dries dark and does not show. Has an extremely fine sharp abrasive, a cleaner, and wax content, all of which make it the perfect rubbing compound.—155.

Wateroil Clean-Up Polish No. 1900 —Positively eliminates bluish bloom or haze which is ordinarily found after oil rubbing. Leaves surface clear, clean, free from finger marking or dust.—154.

Rubber Gloss Furniture Polish—Lays a hard, protective wax film over the surface that won't oxidize, show finger marks or gather dust. A light dusting with a soft cloth is all that is needed to maintain a beautiful luster, for the protective film stays put . . . . doesn't dry out quickly and disappear. The emulsion itself may be used as a light cleaner, preparing the surface for the protective coating of wax. Easy to apply and maintain. Is effective in restoring original color to faded surfaces. Designed especially for fine finishes of wood, metal, plastic, etc. Contains no acids, strong alkalis or solvents which might tend to dissolve a finish.—156.

Quick-dry filler—Pyrax fillers, combined with synthetic resin, are still the outstanding fillers. The addition of the resin accelerates drying and adds firmness in adhesion; also ease of wiping and cleaning up, plus compatability with lacquer and synthetic surface coatings. For a real quick-drying filler, this is tops.—F. R. B.

While the trend has been away from bleached mahogany during the last six months, due to the expense of producing this finish (and its lack of durability) many manufacturers today are using Prima Vera veneers and staining them to resemble bleached mahogany. This is produced by using a bluish purple stain and a brown filler; if the finishing is properly done it is hard for the public to distinguish the difference between it and bleached mahogany.—H. W. C.

High-Solids Furniture Lacquer—A specially developed production finish for the furniture industry. One spray coat, 37% solids at the gun, has the equivalent build of the average 2-coat lacquer. Does not require heating or special equipment; eliminates one finishing and one sanding operation; is tough, durable, alcohol-proof, and withstands a most severe schedule of cold-check tests. Now used by the country's leading furniture manufacturers.—195.

"Tops" (Top Coat)—Is revolutionary in its action. One coat is equal to two coats of ordinary lacquer. Requires no special equipment, no force drying, yet it may be sprayed hot or cold and will stand baking. Covers approximately 30% more than ordinary lacquers. Dries practically same as lacquer . . . . tough, alcohol and water resistant. Does not

Several furniture manufacturers are now using varnishes that are baked from one to two hours at 150°F., and they are getting excellent results. Some are of a resin type, while others are of the regular varnish type. The average solids of these materials are about 47%.—J. M. V.

check or shrink. Available in any desired sheen—gloss, satin, dull or flat. A single coat over sealer may be rubbed the same as lacquer and will be found to have plenty on the surface.—147.

Miscellaneous

Several interesting and valuable materials are listed under this general heading which includes various kinds of materials that do not fit appropriately into the foregoing classifications.

Float Pearl (Dipping)—Thinned out with the required solvent, it spreads easily on water. For dipping on pencils, handles, etc., to obtain variegated pearl effects.—183.

Kem Bakolescent Enamel—Has the beauty, richness and depth of tone afforded by the opalescent particles, combined with the fact that it can be baked without unsightly flooding. Shows extraordinary adhesion to most plastics.—164.

Galvaprep—Chemically prepares zinc, galvanized metal and zinc alloys so that a hard, etched, paint-receptive surface is provided. Changes the oily nature of these metals and thereby eliminates the chipping and peeling of the paints or other finishes.

Dilute one part of Galvaprep with two or three parts of water. Use in a crock or wooden tank. Immerse parts in or brush parts with this solution; one minute maximum time required. Rinse off the residue with hot or cold water. Allow surfaces to dry before painting.—168.

Slipskin Tumbling Enamel — For application to turned wooden parts of all kinds by tumbling. May be had in any color and with varying degrees of hiding power. Three coats tumbled give solid hiding. Reduce three parts enamel to two parts of naphtha. Apply by tumbling. Bake at 150°F. for four hours, or up to 200°F. for two hours. It will not air dry.—158.

Weather Proof Synthetic Enamels for Venetian Blinds—These materials are used in the roller coat process and, aside from smooth lustrous appearance, they will withstand a high degree of weather exposure through windows open to the elements; definitely non-chalking.—161.

Fabri-Clean—Non-inflammable. The speedy thorough cleaner for removing finger marks, spots, etc. Renews fabrics, and leaves no odor or residue.—171.

Textile Printing Enamels—All colors. Will withstand dry cleaning operation, naphtha, soap solutions, etc. Very flexible; perfect adhesion; formulated for every printing type of application.—166.

Kem Plastite Enamel — Specially formulated for finishing plastic materials, and designed to provide thorough adhesion to the hard surface of plastics. Tests on a wide variety of plastic formulations indicate that this finish withstands severe abrasion and impact without marring or chipping.—163.

SV-46 Pan Varnish—A protective coating for use on polished iron, steel and non-ferrous metal products, during interval before being placed in use. Is easily applied and dries virtually as quickly as lacquer,

yet is easily removed by purchaser with common household detergents. Is very pale in color and is serving a very good purpose in protecting steel and cast-iron cooking utensils and other metal objects, while in storage or in shipment.—186.

Silk-Screen Flocking Synthetic Base—Suitable for any color of flock. Can be used on open-mesh cloth, all other fabrics, paper, crepe paper, etc. Unusual adhesion, flexibility, softness of finish. Washable in soap solutions. Will stand dry cleaning process.—167.

Gasket Dip Pencil Lacquer — All colors. High coverage, mileage, non-cracking, non-royalty types. Suitable for pencils sold in export field. Will withstand climatic changes without checking.—165.

R 756 Varnish—An excellent one-coat varnish for fir plywood; dries hard in 6 to 8 hours, ready for service; excellent durability; unusual high gloss; has pale color. For best results, use over the company's specified 6001 sealer.—160.

Wax-O-Namel—In simplest terms, Wax-O-Namel is the successful use of genuine wax as a basic ingredient of an entirely new kind of superior enamel finish. Wax-O-Namel is a synthetic resin finish, the wax being chemically combined by newly developed and exclusive processes. To the average person it looks like enamel and handles like enamel, but its effect is that of a fine enamel job over which wax has been applied and polished. In other words, Wax-O-Namel is enamel that dries with a wax finish, giving remarkable smoothness, a satiny luster, resistance to scratching, durability. Dries dust free in three to five hours, and hard in 10 to 14 hours.—162.

More will be seen of flock finishes in the future and coming year. This can be noticed in the many store windows, as more and more displays are dressed up in suits and hats, etc., with flock to make them look like real suits. —R. D.

Water White Lacquer (MV) — A water white lacquer offering a unique combination of advantages; a top coat over white lacquers; a natural finish on firwood veneer; for interior work on house trailers, etc. Specifications: 1) 27% solids; sprays with ordinary equipment. Eliminates the expensive, time-consuming second coat. 2) Non-yellowing. 3) Very high gloss; may be rubbed or polished.—159.

C. C. C. No-Wax Remover—An improved varnish remover eliminating the paraffin and ceresine wax; a perfect emulsion that is easy to remove after the old finish has been lifted. Will remove paint, varnish, enamel and lacquers, pigmented or otherwise. Takes filler out of the pores of the wood and leaves it free from all finishing material, excepting the stain. Does not raise the grain

The development and application of two companion products—namely, oil-base silk-screen dye and lacquer-base silk-screen dye—has all but revolutionized the textile silk-screen work in some sections of the country. These products are dyes that have body enough to allow them to be applied by the silk-screen method, yet when dry they do not leave the fabric stiff or a film of color on the surface. They leave only the dye which has had the "fixing agent" incorporated in them to eliminate any fixing process after printing. The colors are fast to light and "tub-fast" in all fabrics, including cotton.—H. H. M.

The European war has considerably changed the complexion of business conditions. The steel industry is completely swamped with orders. Their output is limited not by their ability to sell, but by their ability to produce. It is reasonable to assume that the cycle will reach the consumer goods—as it already has in many cases—and productive requirements will be pushed to full potential capacity.—J. A. B.

of the wood and you do not have to use alcohol to wash off the wax, because there isn't any. If any of this varnish remover is left on the work or in the crevices or carvings, you have nothing to worry about your refinished job; in fact, you can put this varnish remover on a finished panel, let it dry and finish over it without it attacking the new finish. This remover can be washed off with gasoline or naphtha.—173.

"Tuf-on" Finish for Airplane Plywood—A new development in airplane construction has demanded an entirely new method of finishing because of the problems involved; namely, resistance to moisture, flexibility to resist weaving, durability to withstand the elements, smooth surface to lower skin friction.

The schedule consists of: 1) An application of Tuf-on No. 74 Clear; 2) several applications of Tuf-on P-40 primer surfacer; 3) two coats of Tuf-on No. 173 finishing enamel, which is made in any color desired.

The complete schedule can be finished in less than eight hours with the use of infra red lamps, which hasten drying considerably. Recommended for use on any surface of this type to withstand extreme durability, such as automotive bodies, trailers, etc.—157.

I. C. D. Formula No. 9 Non-inflammable Remover—Will not burn, explode or injure fabric, wood, leather or metal. Doesn't raise grain of wood. Leaves no wax film after coating is removed.

Two of the above qualities are revolutionary. The first, of course, is the non-inflammable feature, and the second is that because it leaves no wax film, the entire cleaning operation is eliminated, which is necessary when using some types of remover.—174.

Zinsol—A compound for the pretreatment of zinc or zinc-coated products to prepare the surfaces for finishing. Products are dipped in or wiped with a solution of the compound. This causes the formation of an alloy, consisting of zinc and another metal, to form on the surface. This alloy is chemically inert to moisture, the atmosphere, and organic finishes generally, so that it forms a stable foundation for any kind of finish.—169.

Production Wax No. 2—A liquid wax designed to protect the production finish during handling, shipping and erection. Is applied with brush or cloth and is allowed to remain on until after erection, at which time it may be rubbed down. Leaves a firm, transparent waxed surface which serves as protection against

The introduction and perfection of the new crystal clear base for silk-screen colors is a definite step forward in the silk-screen industry. It offers the trade a product that produces a film of color without the objectionable build of ordinary process color and, too, it makes for an idea mixture of color for printing fine work, 4-color separation work, photographic silk-screen work, paper and cellophane transparencies, and possibly many other uses not yet revealed.—H. H. M.

for ...
MAKE SURE OF QUALITY

MAKE SURE OF QUALITY • IN YOUR LACQUER FINISH

A good lacquer finish includes all of the finishing materials from the wood up.

In order to secure an attractive finish from the sales standpoint, the materials must have proper eye appeal. This involves color, texture and all around good appearance. In order that this finish may remain attractive over a period of years, top coats especially must have lasting durability.

You can be sure of a good looking finish that has lasting durability by standardizing on Day materials.

Day Stains, Fillers and Undercoats are developed to have extra sales appeal. The finishes which sell best at the markets are available here, usually a little ahead of the crowd. Day Sealers and Lacquers are pre-tested to insure long life, together with economy in first cost and in application.

Mention your requirements for a good finish and receive a prescription that will add life and appeal to your line.

JAMES B. DAY & CO. • CHICAGO

discoloration. Has been approved for use on all aluminum surfaces that have been given an anodic type of treatment; is also suitable for use on bronze, chrome and other bright surfaces.—172.

All-Purpose Plating Rack Enamels—In the electro-plating field, a new development is a line of "rack" enamels, which will protect plating racks from the action of all kinds of solutions used in electro-plating and confine the current to the products being plated. These enamels are especially useful in automatic plating, where products must be carried on the same racks through various acid and alkaline plating baths.—170.

Ceramic Dipping Lacquer—A pigmented synthetic lacquer for coating pottery and other ceramics by dipping or spraying. Has exceptionally high resistance to moisture, weathering and fading. Will not chip or peel off florist pots that have been exposed to extreme weathering conditions. Also recommended for use on vases and jardinieres. Available in all latest colors including Milori blue, Wedgwood blue, Fiesta red, burnt orange, white, etc. Drying time, dust free in 5 minutes; may be packed within 3 hours.—189.

Jetal (Black Finish for Iron) — A process of giving iron and steel surfaces a lustrous rich black coloring by an immersion process in a Jetal-salts solution heated to a temperature of about 284°F. It does not alter dimensions or change surface texture of metal. Jetal is an oxide of iron and becomes a part of the metal itself.

The work to be colored can be handled on racks, in bulk, in baskets or barrels, depending on its nature. The preliminary cleaning does not have to be as thorough as for plating, but all oil or rust must be removed by ordinary cleansing methods such as alkaline and pickling baths. After rinsing in clear water, the work is immersed in the Jetal bath for five minutes. Upon removal, it will possess an extremely beautiful, deep black color.

Provides an excellent base for modern paints, lacquers and enamels, in case added coatings are desired. Retards rust formation; also allows subsequent coatings to develop their true adherence to the metal.—197.

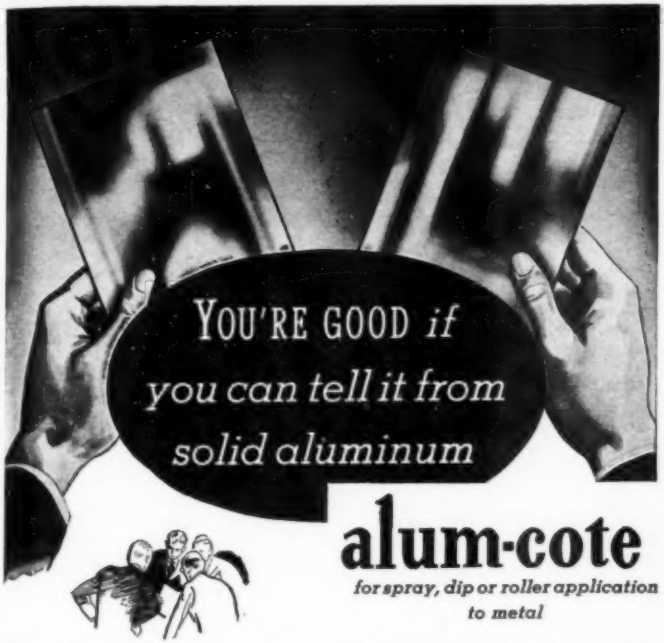
It would be wise for plant managers to anticipate their requirements and investigate these faster finishes and finishing methods now, and not wait until their paint departments are hopelessly swamped.—J. A. B.

A true finishing material cost takes into account all of its factors—not only the initial cost per gallon, but the solid content in the gallon; also the number of rejects, and the opinion of the final customer.

Too Late to Classify

High Quick-Bake Synthetic Enamel—In various colors for roll-coat application on steel strips to be used in the manufacture of metal Venetian blinds. Both sides are coated in one operation and processed in a Hunter-built machine. The coated steel strip, upon leaving the rolls, passes through the heat chamber, receiving 20 seconds at 275° F. and 30 seconds at 485° F. It is then reeled in a coil and stored or sent through production. This material withstands rolling operation, blanking, forming, and drawing operations. It adheres perfectly to the steel and gives excellent durability.—263.

Synthetic Dip Primer—For finishing wooden top and bottom rails for



alum-cote

for spray, dip or roller application to metal

Retaining its brilliant, continuous surface lustre through deep draws and severe sterilization processes, Alum-Cote is ideal for roller coat, spray, brush or dip application (both baking and air drying types). It is often used to cover over spoiled metal and saves the cost of caustic cleaning as well as wasted sheets. Write for a sample, today—no obligation.

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Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

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Pearl Essence has made great headway and I think a lot of this finish will be seen in the future, as it offers many attractive shades, etc.—R. D.

Venetian blinds. No sanding is necessary; it takes a lacquer or synthetic finish after four hours of air drying.—204.

Synthetic Pale Finishing Varnishes—Are water white; withstand severe drawing operations; work on tandem presses, and withstand processing.—205.

Olive Green Synthetic Enamel—For metal office furniture; has exceptional mar-proofness, adhesion, mileage, and durability; obtainable in various colors.—206.

Super Kamex—A clear varnish combining the best features of varnish and lacquer . . . with the following characteristics:

Dries dust free in 5 minutes, and hard enough to sand or rub in one hour; is as tough and durable as any good furniture varnish, and will take a polish or dull-rubbed finish; is waterproof, resistant to alkalis; is not injured by whiskey, gin, perfume or other products containing a considerable percentage of alcohol — although not resistant to pure 188 or 190 proof alcohol.

If thinned 5% to 10% with turpentine, it brushes easily, but to get the best results, it should be applied with a spray. Has a very high solid content, and one coat is equivalent to two coats of clear patented lacquer. An excellent product for furniture finishing and refinishing. Is non-lifting, and can be applied to any surface; made in clear gloss, semi-gloss, and flat.—201.

Anti-Rust Primer—A spar varnish vehicle pigmented with iron oxide and zinc chromate. A suitable undercoat for all kinds of oil-base or synthetic paints and enamels. Dries within 3 to 4 hours. May be applied by brushing, spraying, or dipping. Brush it full body. Spray it reduced 8 parts to one part turpentine or V.M.P. naphtha. Dip it reduced 3 parts to one part mineral spirits.—226.

Exterior Z. C. Primer—A synthetic-resin chinawood-oil vehicle with zinc chromate as the only prime pigment. A suitable undercoat for all kinds of oil-base or synthetic paints and enamels. A primer for all kinds of metal work—exterior and interior. Especially designed for all kinds of metal parts for building construction, which may lay outdoors for some time before being used in construction. It does not skin over in the dip tank.—225.

Korolac No. 495—A new Koroseal paint; gives a semi-glossy black finish; is recommended wherever extremely corrosive conditions disqualify any other kind of paint or coating. Applied to metal surfaces after they are prepared as for any other kind of paint or lacquer, the primer forms a strong bond between the Korolac and the metal itself.

Korolac No. 495, when thoroughly dry, will withstand all acids, alkalies and salts in the concentrations commonly met with in industry, up to temperatures of 150°F. It is not affected by chrome, nickel, cadmium, zinc, copper, brass, silver or tin plating solutions, nor are such solutions contaminated or fouled by the paint when it is thoroughly dried.

Ordinary atmospheric conditions have no effect on the paint. It is extremely moisture resistant. The dried film is hard and resistant to abrasion, yet sufficiently elastic to conform to contraction and expansion of the support. Both the primer and the paint can be applied by brushing or spraying.—223.

Quick-Drying Ready-Mixed Aluminum Paint — Especially suitable for dipping on bedsprings and other long parts. May be used on all kinds of

METALUSTRE is the Supreme Metallic Finish for metal products of every description. It is beautifully lustrous, adherent, hard, marproof, durable, moisture and perspiration resistant. It is supplied in copper, brass, bronze, silver, and other metallic colorings, and also in brilliant reds, greens, blues, and many other colors.

For Baking: Codur METALUSTRE Synthetic Enamel sprays as readily as ordinary baking enamel, dries out of dust rapidly, and bakes ready to wrap and ship, without danger of paper-printing, in from 15 minutes at 325° F. to 60 minutes at 250° F. It can be used with either baking or air-drying primer. With proper equipment, can also be applied by dipping.

For Air-Drying: METALUSTRE Lacquer Enamel gives a fine metallic finish in a single air-drying coat. This well-known M&W product is being used by hundreds of manufacturers.

Full information on either baking or
air-drying METALUSTRE on request.

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LACQUERS PIONEERS IN PROTECTION ENAMELS

metal parts, on sealed wood, and on non-porous surfaces that do not require extreme outside exposure. It air dries in ½ hour to handle and overnight to ship. Bakes at 200°F. in 15 minutes. May be dipped or sprayed.—227.

Flexible Polishing Lacquer — Dear Ed: In response to your letter asking for comments on some type of finishing material, I have chosen one special lacquer out of three or four kinds that we are using . . . a flexible special polishing lacquer. The following points are based on my experience in using this special lacquer:

1) Never causes a foreman finisher any trouble.

2) Can be used specifically in any type of weather.

3) Drys quickly; in a pinch it can be rubbed in two hours; also drys marproof overnight.

4) Can be rubbed or polished as good as any piano.

5) Contains 27% solids; is waterproof and alcohol proof.

6) I have been using this lacquer on store fixtures and showcases for the past 10 years. It has made an exceptional forward stride.

7) I have obtained exceptionally satisfactory results by using the same manufacturer's thinner with this lacquer.

8) To accomplish these results, this lacquer must be used on top of shellac.

9) A first class job of finishing may be accomplished by using the following schedule:

a) One coat of stain.

b) One coat of thin shellac.

c) Sanded and filled.

d) Two coats shellac (sand between coats).

e) Two coats special flexible lacquer (rubbed).—A. C. (Foreman Finisher in Eastern Showcase Factory).—210.

Film-Fix—Aluminum finish resists brines, gases, acids and extreme heat temperatures and also rates high in rust-preventive qualities. Will bake at any temperature up to 1,000°F., without discoloration and adheres to steel at 1,400°F. Air dries to handle in 10 minutes and hard in six hours. Remarkably elastic.—213.

Ault & Wiborg Corp's. exhibit, Stove Industries Convention, Cincinnati, in December.

YARLAST

An Outstanding EXTERIOR BAKING SYNTHETIC

A Synthetic Baking Enamel, distinctive in performance—designed to give dependable service for Gas Station equipment, metal storage tanks, metal signs and all metal products that are subjected to exterior exposure. . . . The finish is tough and elastic—withstands use and abuse—has excellent resistance to gasoline, grease and water, with maximum gloss and color retention. . . . Yarlast has a wide baking range designed to meet your particular requirements. . . . Available in white and colors.

Samples and further information on request.

YARNALL
THE SHIELD OF PROTECTION

YARNALL
PAINT COMPANY

Industrial Division

PHILADELPHIA - - - PENNA.

"Being in the safe and vault business, our work is hardly ever standardized. Generally customers send in a piece of wood trim to be matched. It is a real job to imitate all kinds of wood on metal. It is a bigger job to know what kind of tools to use and where to get them.

"I have used various things to obtain grained effects and the things I write about are what I refer to when I say an old-time grainer would be shocked. I have never seen in print anything that comes near my method of graining . . . ."

W. K. Perdue

Hand Graining on Metal

IN CONNECTION WITH CUSTOM FINISHING

THE REPRODUCTION of wood grain on metal, if done by hand, even at its best, is only an imitation. The best craftsman at the job cannot hope to produce an imitation that will bear close inspection. Of course, some excellent imitations can be and are being made; they are attractive and satisfactory for the purpose. Otherwise, there would be no demand for this kind of work.

A casual observer, upon viewing the work of a real artist, is very apt to say, "Why, that looks just like real wood." I have heard that remark many times; but it's a dead give away. The speaker, by his own words, is proclaiming to all who hear that he knows it is only an imitation. So we go about our work striving to reproduce the work of nature. We do the best we can, using all working tools available to obtain desired results.

BY W. K. PERDUE

In this article I will deal only with hand grained work, which is so often used on custom work—especially when a foreman finisher has to reproduce a single order to match a customer's sample that has been submitted. These orders must be gotten out quickly.

I assume that all finishers are familiar with the tools commonly used for hand graining. There are blenders, stipplers, graining brushes, graining combs, growth rollers, etc. Occasionally we get a job for which none of the common tools seem to be adaptable.

A Typical Special Job of Custom Graining

A few days ago a customer sent in a piece of wood to be used as a sample for finishing a vault door. It was a piece of wood 2-in. wide by 6-in. long; and our problem was to visualize from that small piece of wood,

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These new lacquers, Hilo Bulletin No. 11-1, are all increasing steadily in volume of sales. Accept now, with our compliments, a copy of the bulletin and one gallon or five gallons of Hilo No. 3303 One Hour Sanding Sealer . . . whatever you would need for a good trial. Later you will want to order some of the lacquers on approval—and you'll have Hilo in your plant regularly or as a good second source of supply.

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HILO VARNISH CORP. Date.....
42-60 Stewart Avenue, Brooklyn, N. Y.

Gentlemen: Please send us a sample of Hilo No. 3303 One Hour Sanding Sealer. We will need ..... gallons for our test.

Name.....

Company.....

City..... State.....

I. F. JAN.

how a large vault door that measured approximately 4x9-ft. would look with that figure. There was hardly enough detail in so small a piece of wood for the grainer to use it as a guide. The customer called it walnut, but it wasn't walnut. It was birch.

We had never done any birch graining and none of the tools we had seemed to be suitable for this work. At least my grainer was stumped when I handed him the wood sample. He studied it for five or six minutes without comment. Then he asked, "How'll we make it?"

"I don't know right now," I replied, "but we'll make it some way."

We started the job that day and before evening we had the ground color on. Next morning we prepared to grain it.

I had purposely permitted the grainer to make a try at doing the actual graining himself, without any assistance from me, for I hadn't, as yet, determined just how the graining operation could be accomplished. It was one of those jobs calling for some method out of the ordinary. Our regular walnut and mahogany tools did not seem to be suitable for this job.

In the course of a half hour, my grainer showed me a sample he had made. It wasn't like the customer's sample. He had grained it too much like walnut.

"Doesn't look like the sample," I said, and again came his query, "How'll we do it, then?" I could not answer immediately, for I still hadn't determined how it should be done.

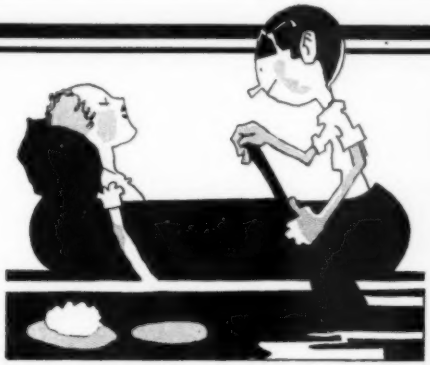
Taking up the wood sample, I studied it for a few minutes. It was a slab cut piece; that is, the layers of the year growth showed on the face. The lines were faint and showed spots where the wood had been cut across the growth.

My grainer looked at me sort of perplexed; the expression on his face lead me to believe that he thought I was stuck, too. However I soon made my decision. I called for a newspaper, tore off a sheet and crumpled it into a wad about the size of a baseball. The graining color had already been applied to the door so, with the crumpled-up newspaper, we proceeded to do the job.

Imitating Birch Grain

Using the wad of newspaper in lieu of a suitable graining brush, we obtained an effect that closely resembled the natural grain of the wood. The irregularity of the wadded-up paper, as we drew it along the length of the door, made the faint lines appear exactly as we desired. By wadding the paper a different way each time we drew it across the door, we changed the pattern so that we made an exceedingly attractive and realistic job of graining. To make the spots where the grain was cut across the layers, we simply rubbed out some of the graining color with a piece of cheesecloth pulled tightly over our thumb.

Of course, I do not mean to imply that by simply drawing crumpled-up paper across the door and rubbing some of the graining color off with our thumb, we produced a good graining job. But I do say that our wad of newspaper and our thumb, used as tools and manipulated in the proper manner that an expert grainer would use them, did the job successfully.



"Paddling your own canoe" may be romantic but it's not PRACTICAL . . .

In this age of specialization it PAYS to be practical. Our specialty happens to be coatings and the practical value of permitting us to help with your "paddling" is best attested by the many well-known manufacturers we serve. We believe that we can show you how to cut finishing time, lower finishing costs and increase the salability of your product. Interested? Why not take us up on it? Address Department A.

THE STANLEY CHEMICAL CO.

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In other words, I'm trying to get across the fact that most any job, whether graining or something else, can be done successfully if a little ingenuity is brought into the picture. A successful grainer must be resourceful. In our plant we use anything we can think of to obtain the results we are after; rubber erasers, small sticks of wood, sponges — anything at all that will give the effects desired.

Rollers for Making Specks or Dots

Then there are the graining rollers for rolling in those small fine dots or specks that appear between the year growth lines. Rollers that can be purchased never seemed to do the work to our satisfaction; the marks they make don't look natural. The row of discs, with their notched edges, make a pattern that is too uniform. No tool of this design, that I ever saw, comes any where near approximating the effect that shows up in walnut and mahogany; and being unable to buy what I needed, I proceeded to make one.

I placed a finished piece of walnut panel on my desk and, as nearly as possible with pencil and paper, I sketched the dots and specks exactly like they appeared in the actual wood. I made this drawing 2½-in. wide by about 8-in. long, and was careful to make the top of my drawing match perfectly with the bottom. Then I went over it all with good black ink. Next, I had a zinc plate made which reproduced my drawing to the minutest detail. I sent this zinc plate to a rubber stamp company, with instructions to make rubber faces that could be glued onto a wooden roller. It was no trick to fasten handles to these wooden rollers and, with the rubber reproducing the natural growth of the wood, we had a tool that does a real job of rolling in specks which really look natural.

The initial cost of the zinc plate was $10. Since the plate is our property, all that is necessary to obtain a new roller is to send in the plate for new rubbers to be made. The rubbers cost 75c each. We now have three or four zinc plates of different designs. They never wear out.

Insistent Demands for More Speed in Finishing

But being able to reproduce almost any kind of wood is not the complete picture of graining operations. The foreman finisher is put on the spot many times to do almost the impossible. A job comes in that is special and must be completed and shipped by a certain date. It's a continual "bug bear"—so to speak—that incessant question, "How soon can we ship?"

When the customer makes his demands on the manufacturer, he has no idea what may be involved in getting out his order. He sets up special designs, special finishes, etc., and demands immediate shipment. The harassed foreman finisher suffers because the production department of his own plant, desiring to satisfy the customer, passes the information along to the various departments involved in getting out the order. The finishing department, being the last in line, must do the impossible. The foreman of that department must do his work in whatever time is left between the

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Lionoil

LIONOIL ADVANTAGES TO BARE-METAL SHIPPERS

1. Your customer will receive the advantages of primed stock. Lionoil need not be removed if other finishes are to be used.
2. Wears and resists rust far longer than average anti-rust coating.

Easily Applied and Economical

Bake or air-dry
Spray, dip or brush
Low cost protection

Write for free sample.

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Industrial Varnishes • Enamels • Lacquers
DETROIT, MICHIGAN WALKERVILLE, ONTARIO

delivery of the work to him, and the date for shipment, consequently that individual, at times, is looked upon as a sort of a hokus pokus genie.

"Can't you get it out quicker than that?" is a frequent question. "Don't you have something that dries fast, so more than one operation can be done in one day?" is another. "Can't you leave a coat out, so as to make early shipment?" "Don't you have something that is different that can be used on this job?"

These and other questions of the same ilk are always being put to the foreman finisher—and he usually complies if possible. He really does bring his hokus pokus genie ability into action—if he has that ability. He can't always do a quick job and still maintain a quality standard, but in the majority of the cases he does a satisfactory job — a job that perhaps no one but he himself knows what was left out or what was used. Least of all, the customer doesn't know. The foreman, knowing that his position depends on satisfied customers, has functioned properly. He has used knowledge he possesses and has done the job in the specified time and in a manner that reflects credit to both himself and his firm.

Superintendent Puts Me On the Spot, Right

About four years ago our superintendent came to the finishing department and briskly announced: "Perdue, you've got to cut down on the time for graining operations. Ten to 12 days is too long."

He referred to the complete cycle of operations, from bare metal to the final finish coat.

We discussed the proposition a few minutes and then he left with this parting shot: "It's your problem, Perdue. Get busy and solve it."

It so happened that we were working hard on quite a run of safes finished in walnut and mahogany. Several of them were ready for graining which, at that time, required from four to six days drying time after being grained—before the final finish coat of lacquer could be applied.

That evening I went home with my "think tank" working overtime.

Former Schedule, 11 Days Present Schedule, 2 Days

By morning I had determined what to do. It was something never tried before, but I put it into operation on the first safe we grained that morning, not even bothering to make a test. I was so sure it would work that I ordered the safe completely grained and finished according to the procedure I had outlined in my mind the evening before; and it did work to complete satisfaction.

By the one expedient I had adopted, we cut off the four to six days drying time. Safes we grained that day were completely finished, even to the final finish coat. But I wasn't content with stopping there. The continual driving to get out work was a constant point of contention. It has always been that way on special jobs and always will be. It's proper and good business for us to be that way, too.

If you are not hustling around to get out work, it's because you haven't got the orders to work

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Some sensational features of the New JETAL Process *(patented)*:

It **BLACKens Iron and Steel**

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It **Penetrates Deeply**

It **Saves Production Expense; Enhances Sales Appeal**

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The new JETAL Process is a simple immersion bath for coloring ferrous metals by chemical oxidation. Requires no skill, no elaborate equipment, no electrical current. Work can be handled in bulk, in baskets, or barrels.

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Unique new discovery—a fine furniture and cabinet finish that combines the best features of varnish and lacquer without their faults. Has twice the solid content of lacquer and dries as quickly. Can be sanded or polished within an hour. Water proof, alcohol and alkali resistant. Best results with spray but brushes well if thinned with 5% to 10% turpentine. Non-lifting—can be applied to any surface. One coat of SUPER KAMEX equivalent to two of clear patented lacquer. An ideal product for furniture finishing or refinishing. Comes in clear gloss, semi-gloss and flat. FREE—Send today for free bulletin just off the press. Also tell us your specific problem. Unusual products our specialty.
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A thoroughly practical book in five parts.

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II. Furniture Decoration (Antique Shading, Glazing, etc.)
III. Furniture Finishing (Woods, Finishing Room Tools, Equipment, Materials, etc.)
IV. Furniture Patching.
V. Special Processes (Lamp Shades and Bases, Picture Frames, Japanning. Mirror Resilvering, etc.)

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INDUSTRIAL FINISHING
222 E. Ohio St. Indianapolis, Ind.

on. Some other enterprising firm has obtained the orders, and you can bet they are hustling.

So I was determined to go the superintendent one better. I wouldn't be satisfied with merely cutting out the four to six days drying time. Our operations were:

1st day—Clean and putty.
2nd day—Sand and prime.
3rd day—Sand and fill.
4th day—Sand and ground coat.
5th day—Grain.
6th day to 10th day—Drying.
11th day—Final finish coat.

Eleven days was about the quickest we could hope to get a grained job through. Today we can completely finish any article, through all the operations from the bare metal to the final finish coat, in just two days—in either plain colors or grained.

How I first cut out those four to six days drying time and subsequently cut the complete time to two days perhaps has no place in this article.

Our old professor at school had a pet saying that he used to poke at students quite frequently: "Accuracy and dispatch." So if the Editor of INDUSTRIAL FINISHING thinks well of what I have written here regarding graining, perhaps another article will follow dealing with the "dispatch" end of the above saying.

Fume-Removal Catalog

A new ventilating unit designed to remove corrosive, toxic, high-temperature and hazardous fumes is fully described in the new illustrated 12-page Bifurcator Catalog just issued by the DeBothezat Ventilating Equipment Division of American Machine and Metals, Inc., East Moline, Ill. The DeBothezat Bifurcator, which takes its name from the word "bifurcate," meaning "to separate," consists of an axial-flow pressure fan mounted in a patented housing

with the motor set in a separate built-in chamber, entirely isolated from the air flow. Thus the motor remains cool and clean and is completely protected from the fumes and gases which are by-passed around it. The Bifurcator can be installed as an integral part of the duct system without directional change in air flow. The unit offers low installation cost, savings in power consumption, space and weight. Available in sizes from 8 to 48-in., in a wide range of metals and alloys. Copies of the catalog and price lists may be had by writing the company.

New 24-kt. Gold in Liquid Form

Mark Weisberg Laboratories, Providence, R. I., announce the development of a new certified 24-kt. gold in liquid form for electroplating solutions.

This development fills a long-felt need in the jewelry and novelty industry for a standardized gold electroplate. Among its many advantages are uniformity of color, high efficiency, and exceptional throwing power.

Available with this new gold are special reagents for preparing electroplating solutions and alloys for pink, red and green solution.

Roxalin Representative in Ohio

The Roxalin Flexible Lacquer Co., Elizabeth, N. J., announces that the company has sent Mr. Frank C. Thomas to Ohio to serve as a representative in that territory. Mr. Thomas has had a thorough school-

Frank C. Thomas is backed by experience with and knowledge of all Roxalin products.

ing in the Roxalin plant and laboratory, and for the past three years has represented the company in Connecticut. He has a splendid background of experience and an excellent knowledge of Roxalin products.

PAINT—
—VARNISH—
—ENAMEL—
—LACQUER

For WOOD and METAL FINISHING

Call Our Technical Engineers

The THRESHER VARNISH Co.
DAYTON, OHIO

Driven Rollers Apply Finishing Materials

The Chas. E. Francis Co., Rushville, Ind., (60 years' experience in building gluing and coating machinery) announces improvements on new models of rubber-roll spreaders for synthetic-resin glue and for lacquer coating jobs. The accompanying illustration shows Model SPB bench-size spreader converted into a floor machine on casters. Since the machine is individually motored, this type of mounting makes it portable and therefore widens its range of possibilities and usefulness in many factories. It can be placed where it will work to best advantage.

In another case the large Model SPD spreader was converted into a special coating machine for lacquer, graphite, etc. It was fitted with an agitator in the lower pan, and a special conveying and brushing machine was attached to it. The company specializes in designing and building a variety of roller-type machines for spreading or coating flat sheet stock with a spread of glue or specified thin coating of lacquer, enamel or other finishing material.

New...

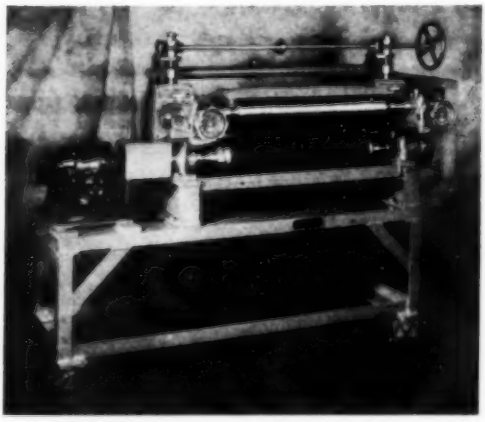
MATERIALS
SUPPLIES
EQUIPMENT

Small Spray Outfit

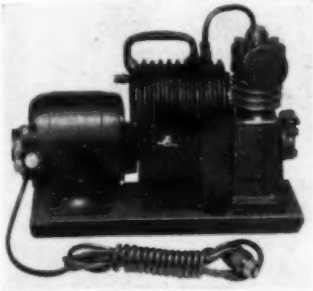
A new direct-drive spray-painting outfit is offered by the DeVilbiss Co., Toledo, Ohio, to serve the field where medium and small light duty spray equipment is required. It is operated by a 1/3-hp. motor, has ample capacity and is a compact and sturdy unit.

Of the piston type, the compressor is directly connected with the motor, has a displacement of 4.58-c.f.m. and holds the DeVilbiss Type GC spray gun at 38½-lbs. and in its modern design has no weak or fragile parts. The compressor is a single cylinder, ball-bearing type with 2-in. bore and 1½-in. stroke. Its maximum working pressure is 40-lbs.

A fan-type counter-balanced fly-



Portable roller machine for coating sheets of flat stock with glue or liquid finishing materials. Has many features that contribute to speed and economy in production work.



Motor, 1/3-hp.; air pressure, 40-lbs.

wheel reduces vibration to a minimum and assures proper cooling. The finned air chamber relieves pulsation and serves as an oil-and-moisture separator. The unit is provided with a safety valve, drain valve and connection for hose. Supplied with three different assemblies of spray equipment, selection is easily made of the outfit best suited to any type of medium or small painting or finishing.

Portable Mixer Clamp

A new hand clamp that still further increases the ease of adjusting "Lightnin" portable mixers to a variety of mixing positions is announced by the Mixing Equipment Co., Rochester, N. Y. Just a turn of the hand wheel and the mixer is locked in position for any selected mixing action; no wrenches are needed for any adjustment.

This hand clamp retains all of the features of the "Lightnin" universal ball and socket clamp, permitting a wide variety of mixing action in addition to the off-center double mixing action. Hand wheels on the supporting clamp make attaching or detaching from mixing vessel just a matter of seconds.

Chief feature of the new hand clamp is the exclusive patented double wedge with hand wheel which

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We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

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Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

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No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

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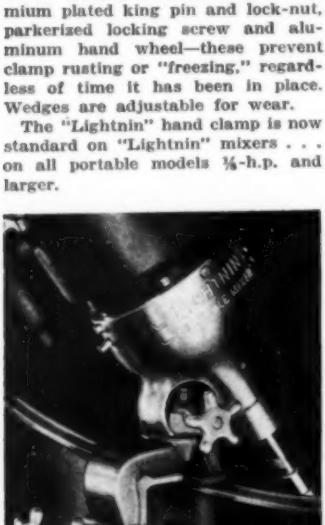
An installation of several No. 2 Globe tilting tumbling barrels in an eastern factory.

tightens the unit more firmly and rigidly than ever and cannot work loose. Double bronze wedges, cadmium plated king pin and lock-nut, parkerized locking screw and aluminum hand wheel—these prevent clamp rusting or "freezing," regardless of time it has been in place. Wedges are adjustable for wear.

The "Lightnin" hand clamp is now standard on "Lightnin" mixers . . . on all portable models ⅓-h.p. and larger.



Easy and quick to adjust and clamp.

Tilting Tumbling Barrels

The Globe Machine & Stamping Co., 1240 W. 76th St., Cleveland, O., announces tilting tumbling barrel equipped with the triple work-shifting bottom. A patented feature available only on Globe barrels, the work-shifting bottom forces the load to shift alternately forward and backward, as well as being tumbled around in the revolving barrel, thereby imparting greater uniformity in the finish of the parts in less time and at less cost than is possible with an ordinary flat-bottom barrel.

These tilting-tumbling barrels are engineered for longer life. All parts are rugged in construction to insure maximum rigidity and greatest possible durability under severe working conditions. Parts are lubricated by means of alemite fittings. All gears are cast from nickel steel and iron for durable wearing qualities.

Electric Heating Appliances

Improved electric heating appliances, some of them for various industrial uses, are illustrated, described and list-priced in catalog E40, sent out by the Acme Electric Heating Co., Boston, Mass. The book consists of 64 pages 8½x11-in., bound between heavy red covers.

Questions Answers

Mixing Stains to Match Finishes

Can you recommend a book that gives reliable and practical information for mixing aniline colors to produce various shades of reds (mahogany) and browns (walnut), etc?

We tried to get this information from a firm in New York from whom we were buying so-called mahogany and walnut stain powders, and in response got six or eight kinds of stain powders but no instructions. Apparently they either do not know or will not tell.

Making made-to-order furniture, we have to match many shades of colors on many kinds of woods, and we experience considerable difficulty and delay in having to send out of town for stain powders. Local stocks are very limited.

After all, we believe, it takes only a few standard colors to produce all the various shades of reds and browns, if you know how to mix them. Recipes for mixing paints, we find, do not work out with aniline stains.

We are interested in water stain, oil stain, and alcohol stain powders. The latter we use only in emergencies; water stain is our main dependence. The book we have in mind should give information on mediums for dissolving oil stain powders too, and

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1940

If you haven't yet done it—plan now to get into flocking. A flock finish on your product will give it a unique and novel character, plus sales appeal—with greater profit. A little flock covers a large area at small cost.

COTTON
WOOL—RAYON

In white and brilliant colors cut to uniform lengths.

CASH IN ON FLOCK FINISHES IN
1940

Write for samples.

CLAREMONT WASTE MFG. CO.
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The country's leading makers

the effect as to penetrations, etc., of the various solvents. Also the quantity of powders to use per gallon of solvent for producing a saturated solution. It is our plan to prepare and keep on hand (in glass bottles) a number of standard colors and it would be an advantage to have these in as concentrated solution as possible.—Y. Q. Co. (Store Equipment).

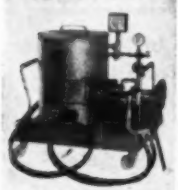
We know of no really satisfactory uptodate book on this subject. Can some reader suggest one? Several practical articles dealing with the mixing of stains to match various finishes have been published in past issues of INDUSTRIAL FINISHING, and we are sending you tear sheets of what we have available. These published articles were in such heavy demand that they are torn out of practically all of our remaining back copies.—ED.

Wood Patching

We are having trouble in finding a patching compound for covering up worm holes, wind checks and other defects in dimension stock. For one thing, we find that the type of cabinetmaker's dough we are using does not satisfactorily absorb the stain of the finish that is later applied to the wood itself. Furthermore, the dough, after drying, has a tendency to sink into the wood. Also, in such cases where we wire-brush the pores of the wood to obtain a more uniform distribution of the filler, we find a very definite tendency for the wire-brushing to pull out the wood dough, consequently, leaving a very shaggy and bad open spot in the dimension stock.

We are wondering if you can be of some help to us in this matter? We understand that an attempt has been made to develop a compound by using a stiff paste made of water glass and silex. We are wondering if you can ad-

HOT LACQUER UNIT



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Imperial **FINISHES**
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Dependable Products Since 1878

THE AKRON PAINT & VARNISH CO., AKRON, OHIO

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vise us as to what success can be obtained from the use of same, or if there is any other compound that you are aware of, which can be used in this connection. Your cooperation and prompt response in this matter will be sincerely appreciated. Kindly address your response to the attention of the man who has charge of this phase of our finishing problem.—M. J. Co. (Furn. Mfrs.)

You haven't told us what brand of wood dough or repair filler you are using, therefore in a letter we are submitting the names and addresses of several manufacturers of excellent crack filler made especially for wood repairs. These materials become very hard when dry, they do not shrink, and they can be finished over the same as adjoining wood. We know that other concerns are using some of them with entire satisfaction. A few of them can be obtained in various colors or tints to match whatever wood or finish you desire. In some establishments the finisher tints the crack filler to closely match the finish. In other cases the crack filler is used "as is" and, when dry, it takes the stains and other finishing materials the same as adjoining surfaces of wood. These materials should also stand up under reasonable wire-brushing.

We question the advisability of trying to use "water glass" (silicate of soda) and silex. However, if any developments of value have occurred along this line, perhaps some reader can tell us.

Another possible method of filling cracks and holes in wood is to burn in stick shellac or stick lacquer, but this is more expensive than repair putty.—ED.

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Varnishes — built for furniture production.

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Finishing Costs

Attention Mr. R. J. Burns:

With regard to your article on "Enamel Viscosity," published in INDUSTRIAL FINISHING for November (pages 20, 21, 22) I have been using the percent of solids as sprayed (including reducer) as one basis for cost comparison. However, differences in the densities of the solid finish is an additional factor entering into cost comparison, if we are desirous of obtaining a coating of certain thickness.

It is quite possible that you have a method of comparing solid coatings, as to cost, which takes into consideration both of these factors. I would appreciate very much a summary of the method you use, or other comment concerning this problem.—R. S. E. (Research Engineer).

Answer by R. J. Burns:

I am not sure that I thoroughly understand your question. If you have in mind comparing costs with one material for day-to-day production, you might find interesting an article of mine which appears elsewhere in this issue under the title, "To Obtain Finish Costs."

If you have in mind comparing unit costs with two or more materials from different sources, several factors are involved. For example: Two white enamels may each have 60% solid content. In one, the pigment is titanium dioxide white, one of the best and most expensive of white pigments. The other may have 50% titanium dioxide white and 50% inert pigment. Both will have 60% solids but the quality will not be the same.

Suppose that both enamels have 60% solids made up of the same grade of pigment. One may have the pigment ground (dispersed) very fine and the other, coarse. The finely-ground pigment will

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cover a greater area and cover more densely, since the pigment particles lay closer together. As an example: A bag of coffee beans, spread out over a table, will cover a certain area. Grind the beans and they will go much farther and hide the surface better.

Then there is the matter of the liquid part of the enamel. The variety is great and the results obtained are just as great.

The only way to detect these differences is to test the quality of the several materials under consideration. By a process of elimination, it is possible to arrive at the two or three most likely materials; then make a production run of each, keeping an accurate cost. After all, it is quality and cost that you are mainly interested in.

Letters From I. F. Readers

(Continued from page 8)

trade name of "Taxlac." It is a lacquer type coating and does not involve baking, but most users forcedry the finish under a somewhat elevated temperature.

We would be pleased to go into this problem directly with the company, since we believe that we could be of assistance to them if we had the additional facts necessary, such as the type of nail they are coating and its ultimate use. — Howe & French, Inc.

Finishing on Conveyor

I have a customer here in Canada (a manufacturer of radio cabinets) who contemplates installing a conveyor-varnish baking system, of which there are none such here in the furniture or cabinet industry. The Lenoir Furniture Corp., Lenoir, N. C., have such a system, as you have outlined in the Sept. 1939 issue, and I intend to see it, if there is none other nearer at hand.

Can you advise me if there is such a system operated in the middle or northern United States? I would appreciate it very much if you could

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give me any information by letter or by telegram, charges collect, as I am extremely anxious to visit plants using this equipment in the States.—A. L. R.

Several of these installations have been engineered and the equipment supplied by American conveyor and oven manufacturers, names of which are being sent to you by letter. To give you quicker service on this matter, we are notifying these companies of your inquiry and we believe they will get in touch with you promptly. They can show you some interesting installations—possibly nearer to you than those in North Carolina—and we know they can give you a great deal of practical information based upon their extensive experience along this line.

Illustrated articles describing conveyor installations in finishing departments were also published in Nov. and Dec. issues.—ED.

Sandpaper

Please advise us the proper sandpaper to use in sanding sealer.—M. J. Co. (Wood Caskets)

Furniture finishers generally use No. 5/0 or 6/0 abrasive paper. We are referring your inquiry to some of the sandpaper concerns.—ED.

Stain Remover

Could you give me information on how to remove wood filler stain from a very expensive stone slab? The stain soaked in and left a dark spot. We have tried naphtha, thinner and muriatic acid. Can you also give me information on how to finish the stone so that it will not take to such stains?—A. N. Co. (Furniture)

First, we suggest you try one or more of the stain removers or bleaching compounds made for this purpose by regular manufacturers, names of whom we are submitting by letter. A suggested makeshift substitute is oxalic acid or commercial peroxide.

For a waterproof, stainproof finish for stone, we suggest two or more applications of a clear waterproofing solution, put on according to directions of the manufacturer, whose name we are giving you by letter. Then apply a coating of clear waterproof lacquer or synthetic material. —ED.

Fly Line Finish

We operate a gratis Research Advisory Service for our customers, and one of them today presented the following problem, which, we believe is in your field. We quote from our customer's letter:

"We are interested in obtaining an especially good enamel to be put on ordinary fly lines for fly fishing. These enamels must be strong, durable, soft, flexible and reasonably hard. It must work in warm weather as well as cold weather, and not be sticky. We have heard that materials used in the waterproofing of silk for raincoats, etc., might have possibilities. Can you direct us to such a finishing material?"

Will you be good enough to give us the benefit of your counsel to assist this company?—I. A. (Large Banking Firm)

We have submitted the names of several concerns whom, we believe, may have a material suitable for this purpose.—ED.

Furniture Color Schemes

In my furniture factory I am making bedroom furniture painted in colors. Will you give me the name of a book, or color card where I can

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get ideas and knowledge on how to use colors on furniture?—A. Mobelfabrikk, Volda, Norway.

We believe that some of the leading manufacturers of finishing materials can supply you with new bulletins, booklets or pamphlets which give suggested color schemes for furniture, and we are asking some of them to send you copies of any literature they have available.—ED.

Burning-in Knife

I would like to know if there is any place in Chicago where I can get an electric burning-in knife that you use on furniture. If not, do you sell them and what is the price of one?—W. E. R.

The name of a Chicago manufacturer has been given by letter.—ED.

In your November 1939 issue, page 42, is a description of a burning-in knife. We would like to get in contact with the manufacturers of this item, with the idea of offering it to the furniture manufacturers of this section.—E. W. Co. (High Point)

Gold, Silver Lacquer

We would appreciate it if you could supply us with the names and addresses of a few concerns who might furnish us with gold and silver lacquer for application to wire cloth or monel metal.—N. Laboratories (For Industrial Research and Commercial Application)

Information given.—ED.

Heatproof; Rustproof; Acidproof

I would be pleased to have the name of the concern in Sydney, Australia, whose inquiry for a rust-resistant coating was published in November, 1939 issue. Also, the inquiry of C. C. C., for drying coatings inside metal tanks. I make a heatproof, rustproof and acidproof coating which has been in satisfactory use for over two years. It has never been commercialized to any extent, and I expect to advertise same in your magazine during the coming year.—E. R. S.

Information given.—ED.

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EDITORIAL

Review of Equipment in Next Month's Issue

In February issue of INDUSTRIAL FINISHING we will publish a Review of New and Improved Equipment for industrial finishing departments. This will include illustrated descriptions of machines, power tools and apparatus used for operations that:

1) Prepare surfaces for finishing coats;

2) Mix, stir or agitate finishing materials;

3) Measure and test finishing materials before application;

4) Apply finishing coats;

5) Move products being finished through the entire finishing process;

6) Speed up and improve the drying of finishing coats;

7) Add decorative features to finishing coats;

8) Rub, buff and polish finishing coats;

9) Measure and test the final films produced by finishing coats.

Since modern product finishing departments have become so highly mechanized, a greater variety of equipment has been made available for saving labor and time in connection with the work, and for making the finished jobs more uniform, more durable, and of higher quality in every respect.

This Equipment Review will be of timely interest and value to every one who has anything to do with finishing on a production basis. Illustrations and brief descriptions will portray many interesting things that reputable manufacturers are offering—and which other concerns are using profitably in various phases of their product finishing operations. Be sure to get your February issue. Look it over carefully; then file it away safely for frequent future reference.

Furniture Styles and Finishes at Los Angeles Mart

The following paragraphs are from a report on the highlights of furniture to be shown at the Los Angeles Spring Furniture Market, Jan. 29 to Feb. 3.

Traditional is gaining over modern in almost every display in the Mart, but the modern, perhaps through a survival of the

fittest process, is better styled this year. Apparently Swedish Modern has served as an impetus for a new American Modern, graceful and lightly scaled and quite different from the early, boxy functional modern. Often the basic contours are modelled closely on 18th Century lines.

This is particularly true of one new group of living room, bedroom and dining room suites that will be shown. Derived from Regency, they have the same fineness of line, aristocratic air and generous use of fine hardware that typified that period.

Another distinct departure is a modern inspired by Jacobean. Lightly scaled, it is sandblasted rather than carved, and is made of ash instead of oak.

In the lower priced and modern case goods, finishes are still around 50/50, walnuts and bleaches; but the tendency against the extremely bleached finishes is still growing and there are a host of new natural finishes that allow the beauty of grain to show. In general, the modern case goods will have more eye appeal, more rounded corners and unusual hardware.

The gain in traditional has been, for the most part, in favor of 18th Century, though Victorian and French will be well represented in the Market.

Early California still has a major portion of the limelight and most of the manufacturers who make it are lengthening their lines. Two new and unusual finishes will be shown in the January Market; one is a crackly white called Mexican White; the other is a warm light tone of pecan. Covers for Early California remain much the same, though there will be less plaids and more stripes.

Though there are not many distinctly new or different style trends on the horizon, this Market will be a definite step forward in finer styling and more attention to detail. All manufacturers have reported a healthy demand for better merchandise.

Manufacturers have kept their prices, in the face of the rising cost of raw materials, as low as possible. In a surprising number of classifications, despite all the talk of higher prices, there has been no rise at all. Where prices have been forced up, they have been compensated by better styling and more selling points.

Plastics—And Where New Finishes Enter the Picture

". . . . my thoughts in regard to the trend toward the use of plastic materials and the finishing of same."—H. Lee, Chief Chemist.

★ Since rapid progress is being made in the field of plastics, the question arises as to different and unique ways in which this material may be finished. Plastics are now being made in a wide assortment of colors, and a very clever technique is now being used by the addition of pigmented lacquers, in particular, to the reverse side of clear plastics.

By using a heavy clear plastic material and applying a pigment-

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*Guest Editorial . . . . Many readers can write an excellent editorial — two or three paragraphs presenting a timely suggestion or valuable idea that will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

ed lacquer to the reverse side, the face of the plastic has a soft opaque effect that is found in no other kind of material that I have ever seen.

Difficulty will probably be experienced in the selection of solvents that are used in ordinary lacquers, but it is very intriguing to find the proper thinner to use with each particular plastic. Application of the lacquer must be made with a spray gun, since brushing is undesirable due to the brush marking the solvent-softened surface of the material. Wonderful adhesion may be accomplished and it may be found necessary for the surface to be sprayed first with a solvent, followed by spraying the lacquer.

Quite an interesting experimental field will be found in the development of this material and its practically unlimited scope, plus its amazing adaptability to virtually every industry.

Finishing Zinc-Coated Sheets Satisfactorily

★ One of the recent and important developments in the finishing process has been the preparation of zinc-coated sheets to take and retain baked synthetic enamels. I have in mind the recent developments in zinc-coated and zinc-alloy-coated sheets that have been given a phosphate treatment which leaves a fine crystaline phosphate film on the surface and offers a neutral base for the finish.

Zinc is recognized as the outstanding corrosion resisting coating for sheet steel, but until recently zinc-coated sheets would not take and retain finishes with any degree of permanence. It is now possible to employ zinc-coated sheets in the agricultural, poultry, cooler, washing-machine and allied fields, with the assurance that they can be finished in the popular colors because of the methods of preparing zinc-coated surfaces for paint retention. I believe this is one of the most important developments in the finishing field during 1939.—J. M. A.

Remarkable Varnishes for Flexible Products

★ One of the most revolutionary resin developments has been the introduction of vinyl acetyl type of resin made by a large chemical company in the east, the resin being known to the trade as "Formvar." Two other eastern concerns have done most of the research work in adapting this resin for use in the electrical industry, as an insulating and protective coating on copper conductors. Varnishes made from this type resin are being marketed by both companies.

For years one varnish manufacturer supplied large quantities of an old fashioned gum-oil varnish to the trade for use in the manufacture of enameled magnet wire. This new resin makes a magnet wire that has an insulating film which has approximately five times greater abrasion resistance, three times greater compression resistance, 100% greater flexibility, about the same dielectric strength, ten times the continued flexibility under excessive heat, and almost complete insolubility in all types of common solvents.

It looks very much as if it is only a question of time until the older type of enamel will be replaced by this new resin. The chemical company manufacturing the resin used in this material has built a new $400,000 plant to make this resin.

Another new varnish resin that has been developed is in the alkyd field. This new resin is very pale in color, can be made with any desired flexibility, and has exceptional speed of drying. Varnishes made from this resin have found great favor as an adhesive in the textile industry, as a finishing varnish for oil-cloth, where a sharp drying, pale varnish is required—and as a finishing varnish in the tin decorating field. Made into a white coating for use on beer cans and screw caps, it has a great many interesting qualities. It can be baked as high as 335°F. without any loss of color by yellowing, it stands extreme fabrication without failure or cracking of the film, and stands sterlization in water at 250°F. for an hour without yellowing or loss of gloss. In some cases, where rubber rings are vulcanized into the finished cap, the sulphur from the rubber turns most coatings yellow, but with this varnish no perceptible yellowing takes place.—J. W. M.

Our New Foremen Finishers; Where Will We Get Them?

"Out of mind, out of existance," is the way some of us have been dismissing the subject of this editorial. But as time goes on this question is becoming more serious. Where are we to get our near future supply of well trained experienced foremen who can be entrusted with the important responsibility of running our modern finishing departments efficiently and economically? They are the individuals who transform materials, equipment, supplies, factory space, invested capital and workmen into profitable production results. Without intelligent management and guidance, everything in our finishing department is just so much frozen assets. In fact, it might as well be junk.

The matter affects not only the users of finishing materials and equipment but the concerns who sell them what they buy. And

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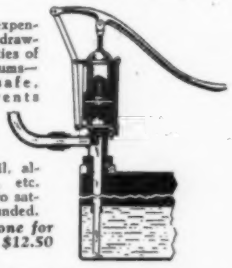

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they are thinking about it too. As evidence of this we quote part of a letter written to the Editor by J. W. Lippitt, representative of one of the well-known manufacturers of finishing materials and specialties. Mr. Lippitt writes:

"For some time I have had the thought in mind of educating the younger men in the finishing industry. There will be a shortage of finishing foremen unless something is done to promote these young fellows and teach them the art of finishing. Most of the shops have a system whereby each man performs only one operation; he has no opportunity to learn the different operations that are necessary to completely finish the product.

"With the cooperation of material manufacturers and vocational training departments in the public schools, it should be quite easy to instruct young boys in the art of finishing. Personally I have done some of this work in cooperation with a local school and as a result there are many boys interested in this field.

"Any suggestion you may have along this line will be a help to myself, as well as to the others interested in a program of this kind."

INDUSTRIAL FINISHING will welcome any constructive comments or suggestions on this subject from others.

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Hilo Varnish Corp., 42-60 Stewart Ave., Brooklyn, N. Y., cordially invites you to visit their Exhibit Booth No. 72 at the Sixth International Heating & Ventilating Exposition, to be held at Lakeside Hall, Cleveland, Ohio, January 22 to 26, inclusive.

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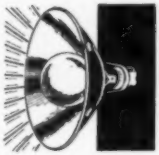

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Schaefer's Eastern Representative Transferred to Indianapolis

The Schaefer Varnish Co., Inc., Louisville, Ky., announces the transfer of its Eastern representative, Mr. James B. McGuire, with headquarters in Philadelphia, to Indianapolis, Ind. In this capacity, Mr. McGuire is taking the place of the late W. C. Schaefer. He will cover parts of Indiana, Ohio and Illinois, including St. Louis, Mo.

R. M. Robinson, Sales Manager, Dies

Robert M. Robinson, sales manager for the Industrial Finishes Division of Standard Industrial Products, Inc. (surface conditioning materials), Evansville, Ind., died Wednesday, December 20th, at the age of 40. He had been connected with the manufacture and finishing of wood and metal furniture for a number of years and his knowledge of furniture styling and finishing will be sorely missed by those who were associated with him.

Laboratory and Industrial Expansion Planned by Jones-Dabney

The Eastern Division of Jones-Dabney Co. held its pre-New Year sales meeting in December. The fiscal year begins December 1st. Salesmen were informed as to the company's program for 1940, which consists of laboratory and production expansion. Additional equipment, now installed, enables the Eastern Division to handle its 1940 business more satisfactorily.

Several new products are being introduced to the industrial trade, one of which is the No. 1073 Flat Varnish, a material having unusual toughness. Other new items are Tumbling Enamels, Paper Lacquers, and White Synthetic Enamel.

H. R. Fox, General Field Engineer of Despatch Oven Co.

The Despatch Oven Co., Minneapolis, Minn., announces the appointment of Henry R. Fox, of Chicago, as General Field Engineer. Mr. Fox will travel out of Chicago, covering all eastern offices of the Despatch Oven Co., and will provide and give complete field engineering service in connection with all problems concerning baking, drying, tempering equipment, including layouts for the application of the new Despatch controlled combustion air heaters and Despatch heavy-duty indirect-fired air heaters and equipment.

Metalprep Maintenance Bulletin

An interesting and instructive bulletin dealing with recommended procedure in cleaning and repainting metal surfaces in all kinds of industrial establishments, has been prepared and published for distribution by the Neilson Chemical Co., 6564 Benson St., Detroit, Mich. Used as recommended, "Metalprep insures perfect bond between metal and prime, and makes the metal safe for paint."

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